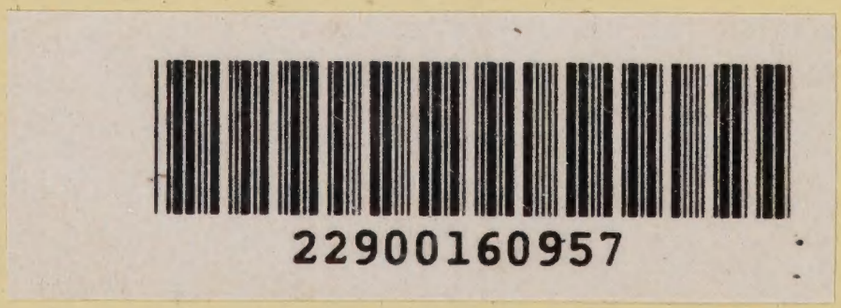
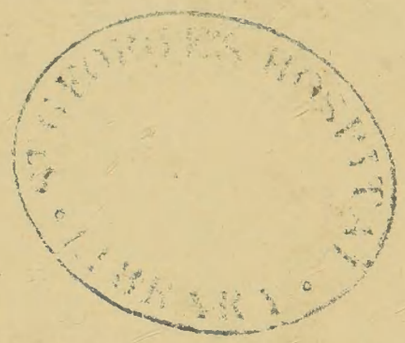
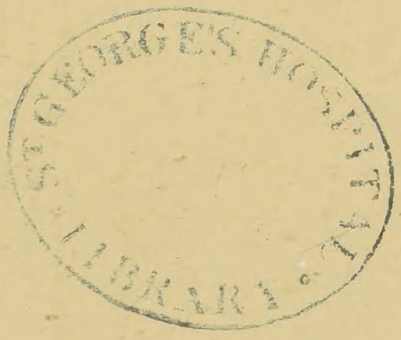
L. 6

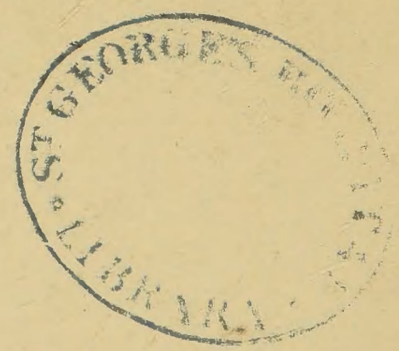


April 7. 90

ST GEORGE'S HOSPITAL
LIBRARY


ST GEORGE'S HOSPITAL
LIBRARY


ST GEORGE'S HOSPITAL
LIBRARY


ST GEORGE'S HOSPITAL
LIBRARY

Digitized by the Internet Archive
in 2020 with funding from
Wellcome Library

https://archive.org/details/s2492id1379909

ST GEORGE'S HOSPITAL
LIBRARY

ST GEORGE'S HOSPITAL
LIBRARY

VIEW OF ST. THOMAS'S HOSPITAL FROM THE SOUTH-EAST.

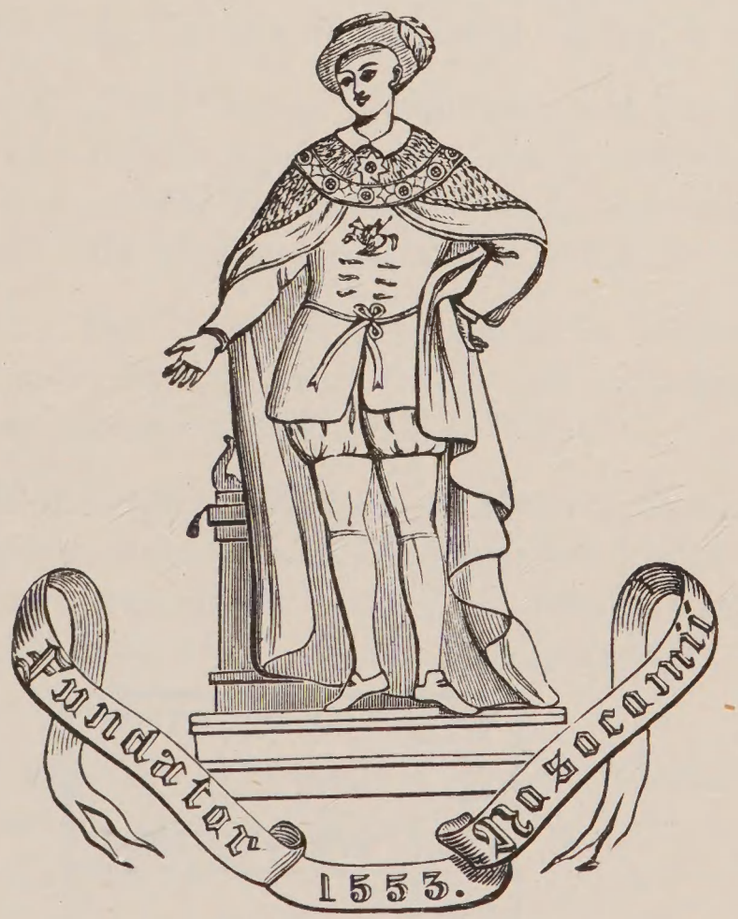
SAINT THOMAS'S HOSPITAL REPORTS.

ST. GEORGE'S HOSPITAL LIBRARY

New Series.

EDITED BY

DR. HADDEN AND MR. ANDERSON.



VOL. XVIII.

LONDON:
J. & A. CHURCHILL, NEW BURLINGTON STREET.

MDCCCXC.

WELLCOME INSTITUTE
LIBRARY

Coll.	welMOmec
Call No.	Ser W1 111

CONTENTS.

PAGE

I. Some Remarks on the Faculty of Association, especially in Relation to Professional Studies. Introductory Address delivered at the Medical and Physical Society, St. Thomas's Hospital, October, 1889. By Frederick Le Gros Clark, F.R.S. . 1

II. A Sketch of the History of Surgery from the Close of the Middle Ages. Introductory Address delivered at St. Thomas's Hospital, October 1st, 1889. By William Anderson, F.R.C.S. . 21

III. Report of the In-patient Department for Diseases of Women for the year 1888. By Charles J. Cullingworth, M.D., F.R.C.P. . . 59

IV. The Medico-legal Detection of Human Blood. A Paper read before the Metropolitan Police Surgeons' Association at St. Thomas's Hospital, March 13th, 1889. By S. Monckton Copeman, M.A., M.B. 95

V. The Diagnosis and Treatment of the Pyæmic Complications of Ear Disease. By H. P. Hawkins, M.A., M.B., M.R.C.P. . . . 117

VI. A Case of Simple Hypertrophy of the Heart illustrating Former and Modern Practice. With Remarks. By Sir Risdon Bennett, M.D., LL.D., F.R.S. 137

VII. Case of Excision of the Rectum. By William F. Haslam, F.R.C.S. . . . 147

PAGE

VIII. Dermoid Cysts in the Floor of the Mouth and in the Neck. By Henry Betham Robinson, B.S., F.R.C.S. 153

IX. Note on the Use of Unna's Dressing in Cases of Ulcer of the Leg. By G. H. Makins, F.R.C.S. . 165

X. On Cross Furrows in the Nails. By W. W. Wagstaffe, B.A., F.R.C.S. 173

XI. Congenital Sterno-mastoid Tumour or Induration. By H. H. Clutton, M.A., F.R.C.S. . . . 179

XII. On Two Cases of Neuropathic or Hysterical Spinal Disease. One attended with Hysterical Dyschromatopsia, the other by Monocular Diplopia. Remarks on the Nature and Diagnosis of the Affection. By Thomas Savill, M.D., M.R.C.P. 187

XIII. Four Cases of Foreign Body in the Air-passages. By Bernard Pitts, M.A., M.C., F.R.C.S. . 201

XIV. One Thousand Cases of Chronically Enlarged Lymphatic Glands treated by Excision. By H. Milton, L.R.C.P., M.R.C.S. 211

XV. Arosa; a Hamlet in the Grisons, Switzerland. By Arthur Foxwell, B.A., M.B., M.R.C.P. . 223

XVI. A Case of Sarcoma of the Thyroid Gland. Removal, repeated Recurrences, &c. Death after Hæmorrhage from the Common Carotid Artery. By Sydney Jones, M.B., F.R.C.S., and W. H. Battle, F.R.C.S. 233

XVII. A Case of Hypertrophic Cirrhosis of the Liver with Jaundice, and remarks upon Prolonged Obstruction of the Common Bile-Duct as a Cause of Cirrhosis. By Seymour J. Sharkey, M.A., M.D., F.R.C.P. 245

XVIII. A Complete List of all Cases of Urinary Calculus, Renal, Vesical, and Urethral, treated in St. Thomas's Hospital during the twenty years from 1869 to 1888 inclusive. By E. Solly, M.B., F.R.C.S. 257

PAGE

XIX. Analysis of One Hundred and Twenty Cases of Congenital Syphilis in Children seen at the East London Hospital for Women and Children, Shadwell. By Richard Andrews, M.R.C.S. . 279

XX. Microscopical Changes in the Organs found in a Case of Cyanosis with Congenital Malformation of the Heart. By George Carpenter, M.B., M.R.C.P. 285

XXI. Cases of Carbolic-acid Poisoning. By Hector W. G. Mackenzie, M.D., M.R.C.P. . . 297

XXII. Report of the Department for Diseases of the Skin, 1888. By William Anderson, F.R.C.S. . 307

XXIII. Report of the Midwifery Department for 1888. By Robert Cory, M.A., M.D., F.R.C.P. . 313

XXIV. Medical Report, 1888. By Hector W. G. Mackenzie, M.D., M.R.C.P. . . . 319

XXV. Surgical Report, 1888. By E. Solly, M.B., F.R.C.S. 355

XXVI. Statistical Report of the Ophthalmic Department for the Year 1888. By M. H. Spencer, M.A., M.B. 463

XXVII. Calendar of St. Thomas's Hospital, Session 1889–90

LIST OF ILLUSTRATIONS.

PLATES.

PLATE — TO FACE PAGE

I. *Illustrating Dr. Sharkey's paper on Hypertrophic Cirrhosis of the Liver with Jaundice* . . 256

II. *Illustrating Dr. George Carpenter's paper on the Microscopical Changes in the Organs found in a Case of Cyanosis with Congenital Malformation of the Heart* 296

Fig. 1.—Section of lung.
Fig. 2.—Section of lung.
Fig. 3.—Section of kidney.

WOODCUTS.

PAGE

Illustrating Mr. Pitts' paper on Foreign Bodies in the Air Passages . . . 201, 207

Illustrating Dr. Foxwell's paper on Arosa.

Map of the district 223

Illustrating Messrs. Jones' and Battle's paper on Sarcoma of the Thyroid Gland. . . . 238

LIST OF SUBSCRIBERS.

Ackerley, R., M.A., M.B., B.Ch.Oxon., Alexandra House, Ashburton, Devon
Acland, T. D., M.D. Oxon., 7, Brook Street, W.
Adam, A. Mercer, M.D., The Church Close, Boston, Lincolnshire
Allingham, William, F.R.C.S., 25, Grosvenor Street, W.
Alliott, A. J., M.D. Cantab., Rosendal, St. John's, Sevenoaks.
Amyot, Thomas E., F.R.C.S., Diss, Norfolk
Anderson, Henry B., 18, Clarendon Villas, West Brighton.
Anderson, William, F.R.C.S., 25, Grosvenor Road, S.W.
Anson, G. E., M.A., M.B.Cantab., St. Thomas's Hospital, S.E.
Armstrong, H. G., Wellington College, Wokingham

Ballance, Charles A., M.S. Lond., F.R.C.S. Eng., 56, Harley Street, Cavendish Square, W.
Bamber, H. K., 5, Westminster Chambers, S.W.
Barker, T. A., M.D., F.R.C.P., 109, Gloucester Place, Portman Square, W.
Barnes, Robert, M.D., F.R.C.P., 15, Harley Street, W.
Barton, J. Kingston, 2, Courtfield Road, Gloucester Road, S.W.
Battle, W. H., F.R.C.S., 6, Harley Street, W.
Beardsley, A., Bay Villa, Grange-over-Sands, Lancashire
Bedford, R. J., Kegworth, Leicestershire
Bennett, Sir J. Risdon, M.D., F.R.C.P., F.R.S., LL.D., 22, Cavendish Square, W.
Bernays, Albert J., M.A., Ph. D., St. Thomas's Hospital, S.E.
Bidwell, L. A., F.R.C.S., 34, Lee Terrace, Lee, S.E.
Blackett, W. Cuthbert, 6, Old Elvet, Durham
Blaker, N. P., 29, Old Steyne, Brighton
Bond, W. A., M.A., M.D. Cantab., St. Thomas's Hospital, S.E.
Bowen, Essex, M.D., F.R.C.S., 32, Devonshire Road, Birkenhead
Bristowe, John Syer, M.D., F.R.C.P., F.R.S., LL.D., 13, Old Burlington Street, W.
Britton, Thomas, M.D., Victoria Avenue, Harrogate
Brockatt, A. A., St. Thomas's Hospital, S.E.
Brown, Fred. Gordon, 17, Finsbury Circus, E.C.
Brown, L. D., Henley Villa, Ealing, W.
Browne, Edgar A., F.R.C.S. Edin., 39, Rodney Street, Liverpool

Bryan, Frederick, M.B., County Asylum, Colney Hatch, N.
Buckley, T. W., The Poplars, Thrapston
Bulstrode, H. T., B.A., M.B.Cantab., South Western Hospital, Stockwell, S.W.

Caiger, F. Foord, M.D.Lond., North Western Hospital, Haverstock Hill, N.W.
Carpenter, A., M.D., Duppas House, Croydon
Carpenter, Edward, Trevathan, Albemarle Road, Beckenham, Kent
Carter, William, M.D., LL.B., F.R.C.P., 78, Rodney Street, Liverpool
Caudle, A. W. W., Henfield, Sussex
Chaffers, Edward, F.R.C.S., North Street, Keighley, Yorkshire
Chaldecott, Charles W., Dorking, Surrey
Charles, T. C., M.D., Albert Mansions, 108, Victoria Street, S.W.
Clapton, Edward, M.D., F.R.C.P., F.R.C.S., 10a, St. Thomas's Street, S.E.
Clapton, William, F.R.C.S., 27, Queen Street, Cheapside, E.C.
Clark, Fred. Le Gros, F.R.C.S., F.R.S., Sevenoaks, Kent
Clark, James Henry, Jamaica, per J. W. Goodinge, Esq., 16, Aldersgate Street, E.C.
Clarke, Arthur, Stock, near Ingatestone, Essex
Clarke, J. Michell, M.B.Cantab., 2, York Buildings, Clifton, Bristol
Clifton, G., 48, London Road, Leicester
"Clifton Medical Reading Society," per J. Fawn and Son, Queen's Road, Bristol
Clutton, H. H., F.R.C.S., 2, Portland Place, W.
Cockell, F. E., jun., Holly Lodge, Forest Road, Queen's Road, Dalston, N.E.
Colby, Wm. Taylor, M.D., The Mount, Malton, Yorkshire
Cooper, G. F., M.B., B.S.Lond., St. Leonard's, Uxbridge Road, Ealing, W.
Copeman, S. M., M.A., M.B. Cantab., 134, York Road, Lambeth, S.E.
Corbin, M. A. Bazille, F.R.C.S., St. Peter Port, Guernsey
Cory, R., M.A., M.D., 73, Lambeth Palace Road, S.E.
Cowburn, A. D., 134, York Road, Lambeth, S.E.
Cowen, Philip, M.D., 47, Ingleby Road, Upper Holloway, N.
Croft, John, F.R.C.S., 48, Brook Street, Grosvenor Square, W.
Crosby, T. B., M.D., F.R.C.S., 21, Gordon Square, W.C.
"Croydon Medical Reading Society," per Mr. Grattan, 16, The Borough, S.E.
Cullingworth, C. J., M.D., F.R.C.P., 46, Brook Street, Grosvenor Square, W.

Davis, G. W., M.B., B.S.Durh., Tower House, Station Road, Sidcup.
Denne, T. V. de, Cradley Heath, Brierly Hill, Staffordshire
Dixon, Edward L., M.D., M.R.C.P., 9, Winckley Square, Preston, Lancashire
Dobson, Nelson C., F.R.C.S., 27, Victoria Square, Clifton, Bristol

Dukes, Clement, M.D., B.S. Lond., Sunnyside, Rugby
Duncan, W., M.D., 6, Harley Street, W.
Dunn, J. E., 24, Stephenson Terrace, Preston, Lancashire
Durham, Arthur E., F.R.C.S., 82, Brook Street, Grosvenor Square, W.

Edwards, Vertue, Shottisham, Woodbridge, Suffolk
Elliott, J. W., 5, Manor Road, Forest Hill, S.E.
Elwin, Charles J., 6, City Road, E.C.
Emson, Alfred, Dorchester
Eve, R. W., M.B., Tyrwhitt House, 101, Lewisham High Road, S.E.

Farrant, Samuel, North Street House, Taunton
Fell, W., M.B., Wellington, New Zealand
Fouracre, Robert P., 20, Tollington Park, N.
Franklin, G. C., F.R.C.S., 39, London Road, Leicester

Gervis, Frederick H., 1, Fellows Road, Haverstock Hill, N.W.
Gervis, Henry, M.D., F.R.C.P., 40, Harley Street, W.
Gibson, John R., F.R.C.S., 10, Russell Square, W.C.
Goddard, Eugene, M.D., North Lynn, Highbury New Park, N.
Greaves, Charles A., M.B., LL.B., 84, Friargate, Derby
Green, C. D., M.D.Lond., Addison House, Upper Edmonton
Greenfield, Wm. Smith, M.D., F.R.C.P., 7, Heriot Row, Edinburgh
Groome, W. W., M.B., Stowmarket, Suffolk
Grose, S., M.D., F.R.C.S., Westbourne, Melksham, Wilts
Guest, Ellis S., 263, Oxford Street, Manchester
Gulliver, George, M.A., M.B., F.R.C.P., 16, Welbeck Street, W.
Güterbock, Dr. P., Berlin, per Julius Lesser & Co., 2, South Parade, St. Mary's, Manchester

Hadden, W. B., M.D., 21, Welbeck Street, W.
Hague, J. T., 320, Brixton Road, S.W.
Hardyman, Charles E., M.D. Durh., F.R.C.S. Edin., 110, Queen Street, Cardiff
Harley, John, M.D., F.R.C.P., F.L.S., 9, Stratford Place, W.
Hartley, Horace, Stone, Staffordshire
Harvey, S. F., 42, Perham Road, West Kensington, W.
Haslam, W. F., F.R.C.S., 33, Paradise Street, Birmingham
Hawkins, H. P., M.A., M.B.Oxon., St. Thomas's Hospital, S.E.
Hawkins, William, Abbotsbury, Dorsetshire
Hearnden, William Alex., M.D., Down House, Sutton, Surrey
Heelis, R., M.B., 318, Lenton Boulevard, Nottingham
Hitchcock, H. K., M.D., Christowell, Branksome Park, Bournemouth
Hobhouse, E., M.B., B.S.Oxon., St. Thomas's Hospital, S.E.
Holberton, H. N., East Molesey, Kingston-on-Thames
Hough, C. H., Full Street, Derby
Howell, Thomas S., The Old Vicarage, Wandsworth, S.W.
Howse, H. G., M.S., 59, Brook Street, W.

Howse, Wm., 8, London Street, New Swindon, Wilts
Hullah, Robert, Lunatic Asylum, Grahamstown, Cape of Good Hope
Hunterian Society, London Institution, Finsbury Circus, E.C.
Hutton, H. R., M.A., M.B., 8a, St. John Street, Manchester

Iles, Daniel, Fairford, Gloucestershire

Jacob, E. H., M.A., M.D. Oxon., 12, Park Street, Leeds
Jackson, James, 15, Huntingdon Street, Barnsbury, N.
Johnston, G. D., Georgia Street, Vancouver, British Columbia
Jones, Evan, Ty-mawr, Aberdare, Glamorganshire
Jones, Sydney, M.B., F.R.C.S., 16, George Street, Hanover Square, W.
Jones, Thomas, M.D., 2, St. Stephen's Terrace, Albert Square, Clapham Road, S.W.

Kershaw, J. E., M.A., M.B.Oxon., Hospital for Consumption, Brompton, S.W.
Kilner, W. J., M.B., 57, Queen Anne Street, Cavendish Square, W.

Lankester, H. H., M.D., 1, Elm Park Gardens, South Kensington, S.W.
Larder, H., Whitechapel Infirmary, Baker's Row, N.E.
Laver, A. H., 26, Cemetery Road, Sheffield
Lawford, J. B., M.D., C.M., F.R.C.S., 55, Queen Anne Street, W.
Laxton, T. L., Taunton Road, Bridgwater
Leeds Medical Society, per A. F. McGill, F.R.C.S., 23, Park Square, Leeds
Lees, Joseph, M.D., 21, Brixton Road, S.W.
Light, E. M., M.A., M.B.Cantab., The General Infirmary, Leeds.
Litteljohn, S. G., M.B., C.M., Central London District School, Hanwell, W.
Lodge, Samuel, jun., M.B., B.S.Durh., Windrush House, Bradford
Llewellyn, D. W. H., Southborough, Tunbridge Wells
Lunn, J. R., F.R.C.S. Edin., Resident Medical Superintendent, St. Marylebone Infirmary, W.
Lynch, G. W. A., B.A., M.B.Cantab., Post Office, Suva, Fiji

Mac Cormac, Sir William, F.R.C.S., M.A., M.Ch., D.Sc., 13, Harley Street, W.
Macevoy, H. J., M.D.Lond., London Fever Hospital, Liverpool Road, N.
Mackellar, A. O., F.R.C.S., M.Ch., 7, Cavendish Place, Cavendish Square, W.
Mackenzie, H. W. G., M.A., M.D. Cantab., St. Thomas's Hospital, S.E.
Maclagan, T. J., M.D., 9, Cadogan Place, Belgrave Square, S.W.
MacLean, Allan., Harpenden Hall, St. Albans
Maconchy, John K., M.B., B.A., F.R.C.S.I., Infirmary House, Downpatrick, co. Down

Makins, G. H., F.R.C.S., 2, Queen Street, Mayfair, W.
Manchester Royal Infirmary, per W. L. Saunder, Secretary
Manners, W. F., Claygate, Esher
Maples, R., Kingsclere, Newbury
March, H. Colley, M.D., 2, West Street, Rochdale
Marriner, W. H. Lister, M.B., Westbourne Tower, Bournemouth.
Maurice, O. C., 75, London Street, Reading
Maybury, A. V., M.D., Mile End, Portsmouth
Mennell, Z., 31, Shepherd's Bush Road, W.
Miller, F. Montague, 284, Amhurst Road, E.
Millman, T., M.D., M.R.C.S.E., Toronto, Ontario, Canada
Morris, C. K., Gordon Lodge, Charlton Road, Blackheath, S.E.
Morton, John, M.B., Eastgate House, Guildford
Murphy, G. Wyndham, M.B., M.Ch., The Lawn, Dunstable, Beds.

Nairn, R., Cheswardine, Market Drayton, Salop
Neate, Chas. P. W., M.R.C.P., F.R.C.S.E., 3, Wellesley Villas, Forest Hill, S.E.
Nettleship, E., F.R.C.S., 5, Wimpole Street, W.
Newsholme, A., M.D., 15, College Road, Brighton
Nichol, F. E., M.A., M.B.Cantab., Ethelbert Crescent, Margate
Norris, E. S., M.A., M.B., 117, High Street, Eton

Orange, W., C.B., F.R.C.P., 35, Cromwell Road, Brighton
Ord, George R., Streatham Hill, S.W.
Ord, William M., M.D., F.R.C.P., 37, Upper Brook Street, W.
Osborn, S., F.R.C.S., 10, Maddox Street, W.

Palmer, A. M., Old Whittington, Chesterfield
Parsons, F. G., F.R.C.S., 79, Lambeth Palace Road, S.E.
Payne, J. F., M.D., F.R.C.P., 78, Wimpole Street, W.
Pern, Alfred, F.R.C.S., Botley, Southampton
Pilcher, W. J., F.R.C.S., High Street, Boston, Lincolnshire
Pitts, Bernard, M.A., M.C., 31, Harley Street, W.
Plowman, S., F.R.C.S., Pharmaceutical Society, Melbourne, Australia
Pode, E. D. Y., Slade, Ivybridge, Devon
Potter, H. Percy, F.R.C.S., Kensington Infirmary, Marloes Road, W.
Powell, J. J., Norwood Lodge, Weybridge
Purvis, John P., 38, Royal Hill, Greenwich, S.E.

Rayner, H., M.D., 53, Harley Street, W.
Reid, R. W., C.M., Hawthorn Lodge, Great Western Road, Aberdeen.
Rendle, G., St. Thomas's Hospital, S.E.
Robathan, G. B., Risca, Newport, Mon.
Robinson, H. B., M.D., B.S.Lond., St. Thomas's Hospital, S.E.
Rockliffe, W. C., M.A., M.D., 9, Charlotte Street, Hull
Rosser, Walter, M.D., 1, Wellesley Villas, Croydon
Rossiter, George F., M.B., Cairo Lodge, Weston-super-Mare

Sams, John Sutton, Eltham Road, Lee, S.E.
Sandwith, F. M., Cairo, Egypt
Saunders, Sir Edwin, F.R.C.S., 13a, George Street, Hanover Square, W.
Saunders, H. W., M.B., F.R.C.S., Cape Town, Cape of Good Hope
Savill, T. D., M.D., Paddington Infirmary, Harrow Road, W.
Scutt, T. Homer, 21, Micklegate, York.
Seaton, Edward, M.D., 35, George Street, Hanover Square, W.
Sedgwick, James, M.D., Boroughbridge, Yorkshire
Sedgwick, L. W., M.D., 2, Gloucester Terrace, Hyde Park, W.
Semon, Felix, M.D., F.R.C.P., 39, Wimpole Street, W.
Sharkey, Seymour J., M.D., F.R.C.P., 2, Portland Place, W.
Shattock, S. G., F.R.C.S., St. Thomas's Hospital, S.E.
Shaw, John, M.D. Lond., Willoughby Road, Hampstead, N.W.
Shepheard, John, J. P., North Walsham, Norfolk
Sherrington, C. S., M.A., M.B.Cantab., St. Thomas's Hospital, S.E.
Simmonds, H. M., 66, Camberwell Road, S.E.
Simon, Sir John, K.C.B., F.R.C.S., D.C.L., F.R.S., 40, Kensington Square, W.
Smith, Frederick W., 40, Newington Causeway, S.E.
Smith, R. Percy, M.D., Bethlem Royal Hospital, S.E.
Solly, Ernest, M.B., F.R.C.S., St. Thomas's Hospital, S.E.
"South London Medical Reading Society," per Dr. Taylor, 11, St. Thomas's Street, S.E.
Sprakeling, Robert J., 58, Merton Road, Bootle, Liverpool
Staddon, John H., 6, Silent Street, Ipswich
Statham, Hugh W., 50, Woburn Place, W.C.
Stewart, Charles, F.L.S., Royal College of Surgeons, W.C.
Stone, W. H., M.A., M.B., F.R.C.P., 3, The Sanctuary, Westminster, S.W.
Strange, W. Heath, M.D., 2, Belsize Avenue, Hampstead, N.W.
Strassburg Imperial University Library (Alsace).
Stuart, J. B., Standishgate House, Wigan
Sturton, Hubert W. S., 2, South Street, Greenwich, S.E.
Sutton, S. W., M.D., per Messrs. Dickeson & Stewart, 4, Queen Victoria Street, E.C.
Suzuki, S., Medical Department, Japanese Navy, Tokyo, Japan

Takaki, Kanehiro, F.R.C.S., Kyobashiku, Tokyo, Japan
Taylor, S., M.D., 16, Seymour Street, Portman Square, W.
Thompson, F. H., Cleobury Mortimer, Salop
Totsuka, K., Medical Department, Japanese Navy, Tokyo, Japan
Treves, W. Knight, F.R.C.S., 31, Dalby Square, Margate
Truman, C. E., M.A. Cantab., 23, Old Burlington Street, W.
Turner, Richard, 22, School Hill, Lewes, Sussex
Tyrrell, W., 95, Cromwell Road, South Kensington, S.W.

Vesey, T. A., M.B., A.B., M.Ch., Knapton, Rosstrevor, co. Down

Wadd, Frederick J., M.B., C.M., Prospect House, Richmond, Surrey.

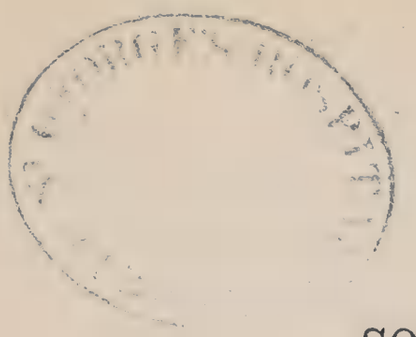
Wagstaffe, W. W., B.A., F.R.C.S., Purleigh, St. John's Hill, Sevenoaks
Walters, F. R., M.D., 20, Finsbury Circus, E.C.
Ward, Fred. Henry, County Asylum, Tooting, S.W.
Webber, W. W., Crewkerne, Somerset
Wells, Sir T. Spencer, Bart., F.R.C.S., 3, Upper Grosvenor Street, W.
West, Charles J., Beaminster, Streatham Common, S.W.
White, E. F., F.R.C.S., 7, Dealtry Road, Putney, S.W.
Wilkinson, T. M., F.R.C.S. Ed., 7, Lindum Road, Lincoln
Williams, F. N., F.L.S., 181, High Street, Brentford
Williams, R. M., M.D.Lond., 95, St. Mark's Road, North Kensington, W.
Williams, W. Rhys, M.D., Linden House, Bertie Road, Leamington
Williams, William, Tylorstown, Pontypridd.
Wilson, W., M.D., Florence, care of C. N. R. Hutton, Esq., 6, Philip Lane, London Wall, E.C.
Winstanley, Clement, Ingatestone, Essex
Wrench, Edward M., F.R.C.S., Park Lodge, Baslow, Derbyshire
Wright, E. H., Swiss House, St. Saviour's, Jersey
Wyman, W. S., M.D., F.R.C.S., Red Brae, Putney Hill, S.W.

York Medical Society, per H. C. Shann, Esq., 71, Micklegate, York

In order to facilitate the safe transmission of the 'St. Thomas's Hospital Reports,' it is particularly requested that the attention of the Editors be directed to any inaccuracies in the above list of Subscribers.

In Exchange.

St. Bartholomew's Hospital Reports
St. George's Hospital Reports
Guy's Hospital Reports
London Hospital Reports
Westminster Hospital Reports
The Obstetrical Society's Transactions
Proceedings of The Medical Society of London
Transactions of The Clinical Society of London
The Journal of Mental Science
The Medical Chronicle (John Heywood, Deansgate, Manchester)
Royal College of Physicians
Royal College of Surgeons
The Journal of The Pharmaceutical Society of Great Britain
Le Progrès Médical (Dr. Bourneville, 6, Rue des Ecoles, Paris)
Journal of The American Medical Association (65, Randolph Street, Chicago, Illinois)
American Journal (H. C. Lea, 706, Sansons Street, Philadelphia)
Transactions of New York Academy, 12, West Thirty-first Street New York
The John Hopkins Hospital Reports, Baltimore, U.S.A.
Walsh's Retrospect (Publisher of), Washington, D.C., United States
Royal College of Surgeons, Dublin (The Librarian)
Parkes Museum (Hon. Sec.), 74 A, Margaret Street, W.
Tokyo Medical Library, Kyobashiku, Japan (per Messrs. Harris & Co., 5, Bishopsgate Street, Without, E.C.)
Senatus Academicus, University of Edinburgh.
College of Physicians, Philadelphia
Archives de Physiologie normale et pathologique (G. Masson, Editeur, 120, Boulevard St. Germain, Paris)



SOME REMARKS

ON THE

FACULTY OF ASSOCIATION,

ESPECIALLY IN RELATION TO PROFESSIONAL STUDIES.[1]

By FREDERICK LE GROS CLARK, F.R.S.

Definition.—Classification.—Influence of education and habits.—Sympathy.—Popular fallacies.—Power of the faculty in animals.—Memory.—Imagination.—Influence of association on the emotions: in art: in diagnosis, prognosis and treatment: in physiology and general science.—Its cultivation.

It may be remembered that, last year, I made some remarks on "The Cultivation of the Faculty of Observation in Professional Work," in a paper which I read before this Society; and I now propose to supplement what I then said by directing attention to the agency of another faculty, that of Association, in mental training, especially in scientific studies.

It is a trite observation that success in any walk of life depends very much on early intellectual training. It is for this reason that preliminary education is now insisted on—and justly so—before the special subjects of professional study are taken up by our young men, just as physical training is essential for success in any bodily exercise requiring strength,

[1] Read before the Physical Society of St. Thomas's Hospital, Oct. 31st, 1889.

activity and endurance. I will not, therefore, apologise for occupying your attention in speaking generally on the subject I have chosen, before applying my remarks specially to professional work. I may say, indeed, that my purpose is not to instruct, but to awaken a fresh interest in the daily routine of your studies.

Let me first of all define the meaning I attach to the word "Association," as a mental attribute or faculty. I can, perhaps, best express the sense in which I use the word by saying, that it is an appreciation of the relation which facts or ideas bear to each other. Thus Association is begotten of Memory and Imagination; for without their co-operation it could have no existence. The most retentive memory, in the absence of imagination, is unproductive; and imagination, without memory, is either sterile, or its fruit is fantastic and unreal. The definition I have given is, perhaps, not a strictly philosophical one; but it has the advantage of simplicity and of serving my purpose.

The alliance which constitutes Association is sometimes obvious, sometimes obscure; in some instances real, in others fallacious. The ability to distinguish between true and delusive associations is a very important ingredient in all pursuits, but especially so in scientific studies. And I may here remark that it is not my intention to exclude from consideration such associated circumstances as stand in the relation to each other of cause and effect. We may, for convenience, class associations under three heads; 1, those which are both just and intelligible; 2, those which, though just and obvious, do not, with our present knowledge, admit of explanation; 3, those which are accidental and fallacious. Many are, of course, doubtful; and it is on the ability to solve these that a correct diagnosis in disease so much depends; and this ability, in turn, is the fruit of accurate observation and experience. Let me endeavour to exemplify what I have just said. All associations which stand in obvious relation to each other as cause and effect exemplify the first class, or those which are intelligible: such are the ordinary sequences of inflammation, the communication of infectious diseases, and the like. As examples of other associations, the presence of which we cannot explain but must admit, such instances may

be cited as hæmatoma auris with insanity, cynanche parotidea with swollen and tender mamma. Many of these are called sympathetic as a cover for our ignorance; such as sickness from a blow on the head, or bodily pain from mental emotion. As regards associations which are delusive, in that they usurp a relationship to which they are not entitled, their name is legion: they abound among the ignorant, and are not wanting in the educated, where there has been no scientific training to correct the inherent tendency, even in logical minds, to confuse the "*cum hoc*" or the "*post hoc*" with the "*propter hoc.*" Such fallacies are the source of superstitions, which are yielding gradually to the extension of knowledge; and must recede still more rapidly before the impetus which has been given of late years to the study of natural science in our universities and schools.

As thoughts often succeed each other without any effort of the will, the influence of Association by which they are guided is very much determined by education and habits. The same symptoms may thus suggest a different train of thought to the physician and to the surgeon. It is in virtue of this association that the value of isolated signs or symptoms is enhanced, by the exercise of the will in recalling other instances in which a sufficient resemblance exists to justify their association. Although, as I have said, the associative faculty often exerts its sway spontaneously, yet we have the power to voluntarily retrace the path, step by step, by which we reach the distant goal. It is often interesting and amusing to do so, and our wonder is excited by the singular medley of links of which the chain of our associations is constructed.

There are few words which have a more comprehensive and suggestive meaning than Association: comprehensive, because of the influence—so often unbidden—which it exercises over our affections and emotions, our thoughts and intellectual habits, and on all our engagements in life: suggestive, because we owe to it so much of our knowledge, especially in science. A thought, a word, the most trivial object of sense, each is capable of lighting up a train of association, by which scenes, individuals and actions are recalled without an effort of the will;—now delighting the imagination, now feeding

reflection, or, perchance, awakening the sad or happy memories of bygone days. The various combinations to which we owe the harmony of music, the utterance of speech, the enjoyment of reading, are all commonplace but no less marvellous examples of the habit of mental association, and of the permanence of its prevailing influence and power.

Though sympathy implies association the converse is not necessarily true; for association may exist without sympathy. The secretion of milk after parturition demonstrates sympathy between the mamma and uterus: but we may often trace consequences, which have no necessary alliance except in the circumstance of their being due to a cause common to both, such as hydrocephalus and rickets, or caries of the foot and suppurating cervical glands, which are, severally, the expressions of a scrofulous diathesis. So, likewise, the active vigour and earnest hopefulness in which you rejoice, and the various infirmities of which I am sensible, are attributable to your youth and to my senility, to which they are respectively due. In many instances we can detect no alliance between co-existing phenomena; yet their very co-existence constitutes a stimulus to investigation, in the hope of bringing to light some latent relation which may lead onward in the path of discovery.

As Association plays an important part in our joys and sorrows, so also much of our knowledge of character in intercourse with the world is acquired from the same source; and memory is greatly beholden to it. The possession of this faculty also entails much responsibility; for it may be controlled by the will; and on the exercise of this control, in giving an elevating or degrading direction to our thoughts, does our moral condition very much depend.

The valuable fruit which the associative faculty is capable of bearing in the enlightened and educated has not saved it from abuse by the ignorant and prejudiced. Popular fallacies of every description are, as I have remarked, founded on the association of circumstances or occurrences, which have no relation to each other save that which is accidental or coincident; yet they are credited with the relationship of cause and effect. The love of the marvellous fosters this habit; and nothing then is too absurd to be accepted, if any

association can be shown to exist which offers the most slender basis on which to build a conclusion. Many of these superstitions are purely local, and either entirely unmeaning, or they have their origin in some accidental coincidence which impressed the vulgar mind. In the village in which I reside, it is a common saying that the boy who takes a robin's nest will break his arm; and again, if the church clock strike whilst the psalm before the sermon is being sung, there will be a death in the parish during the week. Other superstitions are more diffused, and pretend to some foundation; such as sitting down to dinner with thirteen at table, or the sailor's objection to commencing a voyage on Friday; both of which are, probably, associated with Scripture history. Until recently I believed, in common with most people, that the phases of the moon and the weather had a relation to each other: but careful and prolonged meteorological observation, in competent hands, has proved that this assumed relation is fallacious.

This prevailing faculty of association is not confined to man, but is largely shared by the lower animals. Indeed, a due degree of importance has not been assigned to the power of associating ideas which they possess in common with man. It seems to be the foundation of their reasoning; the faculty from which most of their knowledge, which cannot be referred to instinct, is derived. It is on an appeal to its active influence that the training of domestic animals chiefly depends.

This faculty in animals is often called reason, which indeed it is, in the sense that their actions are determined by the inferences they draw from observation. But I think, in general if not always, that these instances of reasoning power are resolvable into the simple association of the two elements of time and place, or to an appeal to some of the senses, and consequent action thereon. Thus, I have a stable cat which is troublesome in the garden, and was therefore consigned to a dark shed during the day. But puss did not approve of this, and let himself out. How this was accomplished we could not discover until he was watched, and it was found that he climbed on to a shelf where he could reach the latch with which the door was fastened, by pressing

down which he released himself. This looks like a complicated process of reasoning which led up to the act: but I apprehend it was nothing more than the accidental discovery that pressure on the latch liberated him; and the subsequent association of this act with his freedom induced a repetition of the experiment. A similar instance was recently narrated to me by a lady, who vouched for its authenticity. A pet cat slept in a room with her master and mistress, who lived in a thatched cottage. One night the cat awakened her mistress by pawing her face, and she aroused her husband to see what ailed the animal. The result was that they found their room was on fire, and that they owed their lives to their pet, who, said my informant, declined to save herself by the open window until she had warned her protectors of their danger. This is a natural, but I think a fallacious conclusion. The cat was probably sensible of discomfort from the presence of the smoke; and sought relief by thus appealing to those on whom she had been accustomed to depend. I need scarcely add that the narrator repudiated this explanation, on the cat's behalf, with some indignation. A very remarkable exemplification of the influence of association in animals, and of the ability to draw a just conclusion therefrom, is narrated, if I remember rightly, in the periodical entitled 'Knowledge.' The owner of an intelligent dog was accustomed to fish for eels in a pond; and for that purpose fixed two or three rods in the ground, and watched the floats, attending to the lines when the disappearance of a float indicated that a fish was hooked. On one occasion the dog, who was his usual companion, barked violently to attract his master's attention; but failing to do so he seized the rod between his teeth and drew an eel to the bank. Now, in this instance, the dog must have noticed the association between the disappearance of the float and the capture of a fish, and reasonably concluded that the two circumstances were related, and acted upon this conclusion.

The influence of the association of time and place is also well exemplified by animal sagacity. The famished birds, which my family have been in the habit of feeding after breakfast during the hard weather, would assemble at the same spot and at precisely the same hour for their accustomed

meal. Horses will, in like manner, draw up at any house at which they have been in the habit of stopping. A remarkable instance of this occurred in the town near which I reside. A tradesman changed his servant, whose business it was to drive round a populous neighbourhood to collect orders. When the new man came he naturally asked for a list of the houses at which he was to call, and was told by his master that he need not trouble himself, but trust to his horse to take him the accustomed round, and to stop wherever his services were required.

A very remarkable and well-authenticated instance of canine intelligence was recently recorded, in which we find the concerted action of three animals, and manifestation of reasoning power, which I am unable to explain on the principles employed in the interpretation of the other cases. On a certain Sunday morning in July, 1887, the porter of King's College Hospital heard a dog barking at the front door and went to drive him away. On the top of the steps he found two fox-terriers standing, and a collie lying beside them sorely wounded in the foreleg and bleeding. As soon as the door was opened the terriers decamped. A medical student, who chanced to come in, attended to the animal, arresting the bleeding and binding up the wounded limb. The dog rested on the grass for a couple of hours, and then departed. He was the property of a drover, who frequently passed the hospital; and his terrier friends lived hard by. I do not pretend to comment on this singular narrative without further acquaintance with antecedent facts, of which none seem to be known. The conjecture of the narrator is that the dogs had been in the habit of meeting, and that the terriers had constantly seen patients carried into the hospital. But even admitting these conjectures as facts, there are many links still wanting before we can explain the consecutive reasoning of the animals regarding the associations which appealed to them. How could they know that the building is a hospital, and that the applicants were patients; and how did they make known to their wounded companion what they intended by taking him there? It is a touching narrative, and conveys a moral lesson which he who runs may read.

It will be observed how important a part Memory plays in these mental acts. But Imagination is also requisite. Another cat story, for the authenticity of which I can vouch, exemplifies this. The servants of a family in the country were annoyed by runaway rings, at their garden bell, which summoned them from their work across an intervening courtyard. They suspected that this was commonly the act of mischievous boys: but at length puss was found to be an arch offender. He was able, on his return home from his frequent wanderings, to climb the garden wall, but could not gain an entrance to the house: and he was observed sitting on the wall, where he had access to the bell-wire, which he pulled; and whilst the servant was opening the gate he slid down unperceived, crossed the yard and entered the house. In this case Memory played a subordinate part, whereas Imagination was a more active ingredient in the association which led to this result. It is evident that the cat must have perceived the connection between the bell-ringing and the opening of the door. But it was not the outer gate that he wanted to be opened, but the house-door, and he had the sagacity to elude notice, and to escape into the house before the servant returned. In this way was explained the apparent mystery of there being no one within sight when the gate was opened.

When I speak of Imagination, of course I do not mean the exercise of the mind in that which is unreal fundamentally or in fact; but that mental attribute by which new combinations are formed out of pre-existing materials. As I have already observed this faculty may become riotous if not under proper control, just as Memory sinks into apathy without Imagination to animate it. You will thus perceive that the one requires stimulating and fortifying, and the other restraint. A lady of my acquaintance firmly believed that she could remember things which occurred before her birth. I think this is a not infrequent belief; and the explanation is, that certain events, occurring at certain localities, have been so often and circumstantially recited in our hearing, and imagination has portrayed them so graphically, that we associate the various elements which compose the picture, until we believe ourselves to have been actors in the scene. On

the other hand memory requires not only to be inspired by imagination, but to be invigorated by careful training, otherwise this important ingredient in Association will not only fail to gain in strength, but will lose much of its natural power. That a retentive memory is a gift there can be no doubt: but there can be as little hesitation in affirming that, perhaps more than any other gift, it can be vastly improved by practice, especially in the young. Our daily and hourly experience demonstrates to us how much memory is beholden to association, in thought, circumstance, time and place, which imagination supplies,—sometimes unbidden, at others sought for. Whatever may be the subject of study, the aid of association is constantly invited to render permanent the knowledge we acquire and wish to retain. Without it, the orator, the actor, the preacher would find their tasks irksome to themselves and unprofitable to their hearers. Nevertheless, in some relatively rare instances, memory manifests an independence of association, which is suggestive of some *quasi*-photographic impression on the brain. A remarkable example of this endowment was narrated to me, many years ago, respecting the late Lord Macaulay, by a lady in whose library the circumstance occurred. A party was awaiting the announcement of dinner, when someone remarked on Macaulay's singularly retentive memory, and begged for an illustration of it. The historian good-naturedly acquiesced, and a volume on some subject with which he was unacquainted was handed to him. He read off two pages and returned the book to one of the company, before whom he repeated, verbatim, what he had just read. It may be reasonably supposed that knowledge so easily acquired is evanescent: indeed I have been told so by one who possesses this gift in a striking degree. The value of association in committing anything to memory may be tested by the effort that is required to retain a medley of sentences which have no relation to each other; such, for example, as the story told of Foote, a humorous writer, and which I remember more than fifty years ago, but had not seen till it was recently reproduced as an advertisement for Pears' soap. It was intended as a reproof to a boasting actor; and begins thus: "So she went into the garden to cut a cabbage leaf, to make an apple-

pie; and at the same time a great she-bear, coming up the street, pops its head into the shop. 'What! No soap?' So he died and she very imprudently married the barber."

I may here say one word on artificial memory, by which I mean most of the aids to memory by artificial means. The expression is self-condemnatory, and such aid is generally the resource of the idle. The associations on which such acts of memory are founded are usually as trivial and artificial as their outcome. The instances in which the zealous student would resort to them are few, and justifiable only where the knowledge thereby acquired is devoid of practical value. I can see no objection to tying a knot in your handkerchief, or to changing a ring from one finger to another: this may prove useful, if you happen to remember for what purpose it was done.

The power exercised by emotional association varies remarkably in different individuals, according to personal experience and temperament. There is naturally more scope for its activity as age advances, in the accumulated memories of the past. But we are all apt to exaggerate our early associations, whether they be agreeable or the reverse,—forgetting the troubles which accompanied those that we remember with pleasure, and more often ignoring the blessings which alleviated our past trials.

"A sorrow's crowning sorrow is remembering happier things."

But we can all control these exaggerated tendencies, if we are willing to keep our emotional associations under restraint. In dreams the emotions and imagination have uncontrolled sway, and the associated combinations are often a whimsical blend of improbabilities, a medley of past events without any natural alliance. Such, indeed, also is often the character of insanity: in both the control of the will over the associations is perverted or suspended.

The influence of the emotions in some diseases and in special temperaments is noteworthy, and deserving the medical man's study. A cheerful manner, and the suggestion of agreeable associations, have often a striking effect in promoting a healthy tendency, and in some instances in even saving life. Of the truth of this remark some notable examples

have been recorded; and I am satisfied, from observation, that hope or despair on the part of the patient is capable of exercising, in special circumstances, an influence which has, humanly speaking, turned the scale between life and death. There may be a despairing wish to live; but it is the hopeful effort that saves. Yet, let me not be misunderstood as commending the encouragement of hope where we know there is none: this I can regard as no less cruel than wrong. In the management of the insane these remedial characteristics exercise a marked influence for good. The suggestion of cheerful associations constitutes, or should constitute, an important factor in the treatment of most cases; and especially so at the present time, when affections of the nervous system seem to be on the increase, in the fast age in which we live.

The association of facial expression with temperament and disposition is also worthy of the practitioner's thoughtful attention. He should be, as I have said elsewhere, a physiognomist. His treatment may be influenced by the information thus imparted.

A curious exemplification of the power of association is that of names with faces. The mention or sight of one suffices often to recall the other. Still more interesting is the dominion it exercises through the medium of the senses. How few of us there are who have not experienced the gentle but irresistible sway by which association thus subjects us to its syren will! The bird's song, the murmuring stream, the scent of a flower, suffice to arouse memories of the past, reviving, it may be, sorrows long since laid to rest, or soothing those that are still fresh; more often, I trust, with you, my young friends, recalling happy moments, which are still further sweetened by a prospect of their renewal. Can you witness, unmoved, the budding green of early spring, with its hopeful promise, or the rich but more sombre tints of autumn, suggestive, as they are, of resignation to the coming winter? Has the sea-shore no voice of association for you? The dull thud of the breaking wave, and its rasping echo as it recedes on its pebbly bed, must surely remind you of your boyish pleasures on the shore; and when you are old it may recall, as it does with me, the welcome periodic rest of mind and body, amid the excitement of a busy life.

Art, in all its phases, as illustrated by its master spirits, is abounding in associations, and no less do the time-worn relics of past ages bring back those eras in almost living presence. What a crowd of associations will a flint implement or a fossil bone awaken in the antiquarian or geologist! Have you ever surveyed the site of an old Roman camping-ground, with its still defined vallum and fosse, without imagination portraying the bristling palisades, the cohorts and their centurions with their helmeted heads and short swords, and the stern sentinels on their sleepless watch at the portals? Or have you wandered through the ruins of an old baronial castle, or gazed in admiration at the crumbling ruins of a monastery or abbey, without a consciousness of the power of association in revivifying the scenes which have been enacted within their walls in the feudal times of early England? You may almost hear the tramp of the horsemen, or the chant of the monks, and see them file past you in spectral array.

These illustrations might be multiplied indefinitely; but association has a more serious claim on your attention and study than in the instances to which I have alluded; for it is by scrutinising and collating, if I may so express it, the various signs and symptoms which a disease presents, and by selecting those which experience has taught you may be fairly associated in the special circumstances of the case, that your diagnosis depends. I will presently endeavour to illustrate my meaning by some examples, as there are few incidents that engender fallacious ideas and conclusions more than loose associations in the investigation of disease.

But we must first have a clear understanding of the distinction—I admit it is in great measure conventional—between signs and symptoms. It is the same as that which obtains between objective and subjective evidence. A sign is objective because it is manifest to one or more of our senses; as colour, temperature, pulsation. Subjective evidence we are compelled to take on trust; such as pain, giddiness, nausea: and these are, strictly speaking, symptoms, the value of which is necessarily less positive than that of the objective class.[1]

We will now glance hastily at the general signs and symptoms on which we so much rely for our diagnosis; such as

[1] For further remarks on this subject, see paper on "Observation" in last vol.

the condition of the circulating and respiratory organs, of the skin, the tongue, and the excretory glands. If we contemplate the varying phases which these organs present under different conditions, as well as the diversified associations of which they are capable, and the many inferences of which such relations are suggestive, we may form some idea of the educational requirements of the clinical practitioner: for it is scarcely needful to repeat my remark, that a correct appreciation of the relation which the several indications bear to each other is the basis on which a correct diagnosis is raised. In some instances all the essential indications are present, and the diagnosis, to those who know how to estimate their value, is simple: in other cases one or more may be absent, and the difficulty of arriving at a correct conclusion is augmented in proportion to the importance of the deficient symptoms or signs. The pulse and temperature may not be in accord: the tongue may not confirm the conjecture suggested by the condition of the assimilating organs. Then the question arises whether these inconsistencies are attributable to our own imperfect examination, or due to some intrinsic peculiarity in the patient or case, or to some other disturbing element which has escaped our notice. We must carefully analyse these apparent anomalies, and weigh their relative importance if we cannot explain them; or we must await the further development of symptoms which may bring into accord the disturbing elements of the case. Where there is urgency we must be guided by our general knowledge of disease rather than by dependence on the light afforded by precedent, which often proves delusive in difficulties. Indeed, this dilemma affords an apt illustration of the insufficiency of precedent where the cultivation of sound principles is neglected. Unexpected complications and novel associations continually present themselves in dealing with disease, which demand a more comprehensive acquaintance with pathology than mere precedents in practice can supply.

Some of the most perplexing cases with which we have to deal are those which afford only subjective evidence, unsupported by any indications which can be brought to the test of observation. I have had considerable experience of this class, in dealing with railway injuries, the patients being

tempted, by the prospect of gain, to exaggerate or feign suffering or incapacity. Hysteria also may commonly be placed in this category. Such cases as these, in which association fails to help us, test the sagacity of the practitioner, but may generally be stripped of their disguise by carefully planned questions and physical examination, whereby the inconsistency of the patient's symptoms with each other, or with admittedly healthy conditions is demonstrated.

I will now select some special cases, exemplifying the value of associated evidence in diagnosis. Almost any disease or injury, except of the simplest nature, will answer this purpose. Take, for example, the eruptive fevers. They are usually ushered in by recognised symptoms,—rigor, quickened pulse, high temperature, and general disturbance of the system. But we must await the development of further indications before it is possible to determine the specific nature of the attack. It is by such further evolution of the case, and the association of other signs or symptoms with the febrile attack, that we are enabled to declare whether the case be one of scarlatina, measles, chicken-pock, &c. Let me briefly relate a case in point, which recently came under my observation and care. A young man came down from London to the neighbourhood of my home in Kent, to play in a cricket match. Whilst playing he suddenly became faint and sick, and had a rigor. I saw him two or three hours later, and found his throat swollen and inflamed so much as to impede both articulation and deglutition. The tonsils, palate, and tongue were of a bright raspberry-red hue; the pulse was rapid, the temperature high, and there was severe headache. The alternative probabilities seemed to me to be scarlatina or acute tonsillitis; and it was not until after the lapse of twenty-four hours that the diphtheritic patches on the tonsils and palate, which speedily coalesced, declared the true nature of the attack. And this was followed by the general engorgement of the throat and prostration which are associated with the absorption of a large dose of this poison. Take again a case of acute osteitis in a long bone, which comes more under the surgeon's care. How difficult it often is to determine the cause of the patient's suffering at an early stage! We seek to associate with his

symptoms some early history, some specific malady, some injury, which may throw light on the case; but often the obscurity continues until suppuration explains the severity of the preceding suffering, which ushers in the tedious process of exfoliation of necrosed bone. But it is unnecessary to multiply these instances to demonstrate how much we are beholden to the association of signs and symptoms in the diagnosis and treatment of disease. In the management of infantile complaints the practitioner is more dependent on his sagacity in associating the objective manifestations of disease, than in those of patients who are able to help him by describing their subjective symptoms.

Again, how many elements there are demanding consideration in their mutual relations, which thus guide us in our prognosis, as in our treatment of disease and injury! such as previous history, health, age, temperament, habits, locality. An injury from which a healthy and temperate man, residing in the country, would readily recover, would probably prove fatal to the intemperate denizen of a populous town. We can regard neither the patient nor his disease in the abstract: we must associate the one with the other, and contemplate all the accidental concomitants which may affect them in their relations to each other.

The treatment of disease, especially by the use of drugs, necessarily tests the ability of the practitioner, by eliciting his acquaintance with the associated circumstances attending each case, and in the requisite combination of the ingredients of his prescription. How commonly neglect of these considerations renders treatment abortive! the rule of thumb is the resource of ignorance. Drugs are prescribed which neutralise each other. Elements are combined, and each is expected to fulfil its mission, without reference to their mutually repellent action, or to organic chemistry which confounds the wisdom of the prescriber. Much in therapeutics is still necessarily so empirical, that it scarcely excites wonder that the discovery of many remedies is due to the accidental notice of the association between the use of certain drugs and their effect. Indeed, I remember that it was the avowed practice of two learned physicians in our hospital, in my early days, to experiment in this way, with the view of

ascertaining some new remedy, or, in other words, some novel association between a drug and the disease for which it was prescribed. Certainly this empiricism has been more fruitful in the discovery of specifics as they are termed, than strictly scientific therapeutics. In this way the specific actiou of iodide of potassium was observed and made known to the profession by one of the physicians to whom I have just alluded.

Physiology affords an ample field for illustrating this subject, in the adaptation of structure to function and of function to environment; such as light and sound in relation to the media by which they are produced; and these again in their alliance with the special nerves of sense, and the beautiful arrangement of modifying apparatus by which the organs of sight and hearing are perfected. This is a chain of association, the severing of one link of which is fatal to the whole. If pain were not associated with physical injury we should lose our best protector. If hunger and thirst were not associated with the necessity for taking food and drink, we should neglect the duty of nourishing the body. But it is not any one science which is alone indebted to the pervading influence of associated facts and ideas. We cannot reason on any subject, deductively or inductively, without the suggestive help derived from this source: whether we proceed from the whole to the part, or ascend from the part to the whole, we must rely on the mutual relations of the constructive elements or data of our argument, to conduct us to our inference. And thus has it been in all great discoveries. Harvey was in this way guided in his demonstration of the circulation; Jenner in his proof of the protective power of vaccine lymph; Bell and Marshall Hall in their researches regarding the nervous system; Owen in his reconstruction of an extinct animal from a single bone. Bacon, the earnest advocate if not the father of inductive reasoning, and Hunter and Darwin, his patient disciples and followers in the same slow but safe path of generalisation; and Newton, greatest of all;—each one pondered over and determined the true association of the constituent materials, with which they, severally, built up the monuments of their immortal fame.

Is this natural gift capable of cultivation and how, is a

pertinent question, and I will endeavour to answer it in very few words. The most obvious method is that of scrutinising every association which is brought under our notice in the course of study, with the view of ascertaining whether it is true or false, usual or accidental: this, indeed, is an essential part of our professional education. But beyond this I have found it both instructive and inte esting to foster the habit of questioning any associated circumstances which present themselves in everyday life ;—the common things which one is apt to take for granted without seeking for an explanation. This may be done whilst you are sitting at home or walking abroad, in town or in country. For example, you know, when the steam is issuing from the spout of your kettle, that the water boils. Or you notice, when you awake in the morning, that there is a deposit of moisture on the inside of your windows, and you infer that the outside atmosphere is cold. The simple association of these conditions, respectively with each other, is commonly considered a sufficient explanation of them; whereas it is no explanation at all. Follow out each of these relations till you have exhausted all that is known about the properties of steam and the condensation of vapour, and you will find ample food for reflection. It has been narrated of Watt when a boy, that in observing the action of steam in a tea-kettle, and reflecting on the association of the ebullition and the moving lid, he manifested the first germs of that mechanical genius which afterwards perfected the steam engine.

Again, when you are in the country, you know that a clear sky in a summer night ensures a heavy deposit of dew, and that the grass remains dry when the sky is overcast. These are related facts, but they are neither self-explanatory nor a law in themselves, as so many persons assume. The explanation, in accordance with simple physical laws, is due to Dr. Wells, a former physician of this hospital. Have any of you ever seen a large branch of a forest tree broken off on a clear summer night, when the air was perfectly motionless? The destructive power of a hurricane is readily intelligible, but here absolute stillness of the air and clearness of sky are necessary conditions of the result. This looks like what I have termed an accidental or fallacious association;

but it becomes obvious and just when you remember that the dew, which is abundant on a clear night, is deposited on each leaf of the summer foliage, and that the slightest breeze moving among the leaves would displace it. Imagine, nay calculate, the great weight of water a large branch would have to sustain at the extremity of the lever, with only two or three drops on each leaf, and then you have an obvious solution of this apparent anomaly. Snow is similarly destructive, especially to evergreens, when the air is still.

One further habit I would recommend you to cultivate, and that is the analysis of words, particularly those which are technically employed in our profession. Assuming a knowledge of Latin and Greek, I think you will find instruction as well as interest in decomposing compound words, and then in tracing the relation of their elements, and their association with the object or condition they are designed to express. But I will not pursue my subject further, for it is time that I finish.

I dare say many of you may think that I have ridden my hobby rather hard, and have occupied your time and engaged your attention with a good deal that is irrelevant to your professional studies. Well,—in order to disarm criticism, I am willing to plead guilty to this charge. But I did not undertake to read a formal medical paper, to deliver a clinical lecture, or even to confine myself within the limits of a strictly metaphysical discussion of my subject. My object, as I have already said, was rather to formulate what you already know, and to give you something to think over at your leisure, so that you may apply the suggestions I have offered, if they commend themselves to your judgment, in the daily routine of your work. I think you will find that this habit will make your studies more interesting as well as more profitable; for surely the ability to distinguish between true and false associations is worth cultivation. Moreover you will find this discipline very serviceable as an aid to accurate observation, which, in its turn, supplies the suggestive materials for reflection.

That many of our great discoveries have been due to the sagacious exercise of this faculty should act as an incentive to its careful education: for a ready perception of the rela-

tions of observed phenomena, combined with a healthy imagination, and controlled by reflection and an impartial judgment, are qualities more or less within the reach of all. Genius is not a special attribute or abstract gift. It implies an alliance of many natural endowments, which find for themselves some special and appropriate channel. It is a mistake to suppose that genius can be fruitful without an effort on the part of the gifted possessor. Self-help and earnestness of purpose have characterised all whose record entitles them to be classed as men of genius. For the character and extent of our natural gifts we are not accountable; but we are responsible for the training of those we possess, and for their cultivated exercise in our intercourse with our fellow-men.

INTRODUCTORY ADDRESS

DELIVERED AT ST. THOMAS'S HOSPITAL, OCTOBER 1st, 1889.

By WILLIAM ANDERSON, F.R.C.S.

Mr. Treasurer and Gentlemen,—I have been induced to adopt as the subject of the address I have the honour to deliver to-day the history of European surgery, because it appeared to me that it is capable of conveying useful lessons for those who are upon the threshold of our profession. It is of course obvious that in the brief time at my disposal I can only deal with a limited period in this history, and with the broader outlines of progress, and I must beg your indulgence for all the imperfections and omissions which are inevitable in an attempt of this kind.

I propose to depict briefly, by way of introduction, the state of surgery at the close of the Middle Ages. I will then endeavour to describe the rise of the New European School upon the ruins of the Greek and Græco-Arabic teaching during the sixteenth century; to trace its progress through the succeeding cycles down to the present time, showing how far and by what means we have advanced step by step in front of the position held by our mediæval ancestors; and finally, to examine how we in the present may learn to profit by the experience of the past.

Surgical knowledge in some form or other has probably

existed from the time of the earliest associations of mankind into communities; but the foundations of a scientific study of surgery were still wanting until two thousand three hundred years ago, when the genius of Hippocrates commenced the rescue of our art from superstition and empiricism. The work begun by him, was carried on by pupils of the school of Alexandria until the capture of the city of the Ptolemies by the Arabs in the seventh century of our era, and then Greek surgery fell from its high intellectual state, never to rise again. During the eleven hundred years of its progress it had remained essentially Greek, although the principal scene of action shifted as time went on from Greece to Rome, and from Rome to Constantinople; and its most brilliant leaders, Hippocrates, Herophilus, Archigenes, Galen, Heliodorus, Antyllus, Leonides, Aëtius, and Paulus, were all of Hellenic blood. Though fallen, however, it was not dead. The conquerors became zealous students of the philosophical and scientific lore of the conquered, and it was through the Arabs that the lessons of Hippocrates and the Alexandrian school were transmitted, emasculated and in Oriental guise, to Spain, Italy, and the rest of Europe in the course of the Middle Ages, there to hold a feeble but unchallenged sway till near the end of the fifteenth century.

Surgery was in evil case at the close of the mediæval period. The surgical teachings bequeathed by the Arabs in the days of their activity, were but a *caput mortuum* of Greek and Hindoo practice, for the Moslems, while approving timidly of the bold procedures described and carried out by their Hellenic and Indian predecessors, feared to repeat them. Their religious prejudices at once limited their researches and served as a cloak for their want of courage, and not only was the study of gynæcology, which had reached a high point under Soranus of Ephesus, permitted to fall into utter neglect, but we find one pure spirit meekly deprecating the performance of lithotomy because it involved the exposure of parts upon which the eye of the true believer could not rest without sin—and of such was the kingdom of the Mahommedan heaven.

In their hands surgery could not but sink; yet in the middle and later part of the Dark Ages the medicine and sur-

gery of Rhazes, Haly Abbas, Avicenna and the others were the best that could be had, and possessed at least some tincture of science and philosophy. But Græco-Arab surgery did not pass outside a contracted circle of students, and for the masses of the people in England, France, Germany, and other parts of Europe the only available treatment in surgical ailments was that afforded by the priesthood, whose methods were for the most part pre-Hippocratic; by stationary or peripatetic quacks; by barbers; and even in some countries by executioners, who had acquired a curious experience in remedying the injuries and deformities which in their official capacity they were called upon to inflict.

Let us now try to picture an educated surgeon of the end of the fifteenth century. He must not be confounded with the unlettered barber-surgeon, for whom he cherishes a profound contempt not unmingled with jealousy. He is a man of respectable antecedents and of some culture; grave and stately in bearing, clerkly in attire, sententious in utterance, and ready to quote Latin aphorisms with the best. Trained in a recognised school of medicine, such as Montpellier, Naples, or Salerno, he has learned all that his books and teachers can tell him, and has been brought up in the conviction that nothing else is worth the knowing. His library is not a large one, but the printing press has already furnished him with such standard texts as the Aphorisms of Hippocrates, the works of Galen, and the compilations of the Arabs, especially of Avicenna; all in the form of Latin translations, for our surgeon understands neither Greek nor Arabic. He might also possess a copy of Celsus; and amongst the moderns his favourite authors are the 'Four Masters' in their 'Gloss upon Roger of Palermo,'—Theodoric of Bologna, Bruno of Calabria, William of Saliceto, and Lanfranchi of Milan; but his most trusted mentor in practice is the standard text-book by the famous Guy de Chauliac, written in 1346. This was only 150 years old, and quite on a level with the latest requirements; for ideas did not race at break-neck pace in the good old days as with us of the nineteenth century, who in our pride of progress, dismiss as effete the handbooks of the last decade, to accumulate the

dust of oblivion in the dishonoured exile of the shelves of the second-hand dealer. So much for his literary material. The implements of his craft are no more varied or modern, and comprise little beyond a knife or two, scissors, saws, forceps, needles, probes, a catheter, a set of trepans with elevators, lenticulars, and other instruments for treatment of head injuries, a chisel or cutting nippers for the amputation of gangrenous parts, a liberal variety of cautery irons, and a supply of bandages and splints, with perhaps some cumbrous apparatus for the reduction of dislocations. Finally, he is the owner of numberless formulas for plasters and salves, many of which are trade secrets, and are treasured as the most precious of his resources.

His practical attainments are restricted. As an anatomist his knowledge is essentially theoretical, despite the experience of a few cursory demonstrations upon the dead subject to which he has listened in his medical school, and perhaps an acquaintance with the writings of Mondino, who had made some original observations upon human anatomy nearly two centuries before; but he knows little or nothing of anatomical topography, and could not for his life put his finger upon the main artery of a limb. In more abstruse fundamentals, however, he is of over-powering wisdom: he knows the exact share that should be taken by the elements—fire, air, earth, and water—in the composition of the body, and everything concerning the four humours—blood, lymph, yellow bile and black bile, with their several properties of heat and coldness, dryness and moisture; and will sort his patients into their temperaments—sanguine, lymphatic, bilious, and melancholic—with that sense of satisfaction which the mediæval intellect seems to have experienced in the achievement of empty theoretical classifications of every kind. He is of course a humoralist in pathology, and will expound, for example, how cancers are formed by black bile overheated, and how their incurability is due to the thickness of the peccant humour which prevents them from being either repelled or discussed; and in a similarly lucid manner he will decide, to his own contentment, upon the nature of any ailment that may be brought under his eye.

As a surgeon his business lies mainly with contusions

and wounds, burns and scalds, and sores of all kinds. He may indeed be consulted upon any surgical disease or injury, but he has permitted fractures and dislocations to pass almost entirely into the hands of the bone-setter, and operations for hernia, cataract, stone in the bladder, and for plastic restoration of lost noses or lips, to revert to the quack specialist, while bleeding and tooth extraction have come to lie more particularly within the province of the barber-surgeon. His operative functions are reduced within very narrow limits. The Greek surgeons have taught him how to reduce dislocations; he can remove portions of the cranium skilfully enough in cases of injury or medical disease, though without any fixed laws to direct the occasion of his interference; but tumours he generally treats with poultices and plasters; strangulated hernia he fails to recognise as such, and leaves the patient to die unrelieved; resection of diseased bones and joints, as practised by Antyllus and Heliodorus, he has probably heard of, but will never tempt Providence by venturing upon anything of the kind; and his amputations are confined to gangrenous parts, as in the days of Hippocrates, unless he determine to operate after the manner of Guy de Chauliac, by tying a tight ligature around the limb and allowing it to drop off by a process of mortification. He may also be able to cure a fistula by the knife or ligature, but even here the empiric specialist is his rival.

In the management of contusions and wounds, however, he is on his own ground, and it will be interesting to see in what his treatment is likely to consist. For ordinary bruises he will be content to apply plasters, the ingredients of which vary with the means of the patient, for he openly avows one surgery for the rich another for the poor; for very extensive contusions the remedy most highly advocated is to bury the sufferer up to his neck in horse-dung. For a recent wound he has the choice of two opposite courses, each supported by great authorities: to keep it open with a view to avert imposthumations and other evil sequences, and this practice he always follows if he believes a tendon or nerve to be injured; or to secure immediate union by means of stitches or bandages. In either case his plasters and salves

will be employed as agents essential to the cure, but he understands the great surgical principle of rest, and has received from Galen excellent advice on the subject of cleanliness; hence under ordinary conditions his results are probably good. Should, however, a large vessel be implicated, his troubles begin in earnest, for he is terribly afraid of the sight of blood unless drawn *secundum artem* from a properly selected vein, under a suitable sign of the zodiac and phase of the moon. And yet his books have given him abundance of counsel. If a man of ready resource, he might clap his finger upon the bleeding point and then apply a tight compress, as once did Guy de Chauliac in a moment of inspiration and to his great renown; or he might try to sew up the vessel, or tie it above and below the lesion dividing it between the two threads as the Greeks advise, but he would rarely have the courage to face the long and sanguinary exploration necessary to carry this excellent principle into effect. His sheet anchor is the actual cautery, and where that fails it is to be feared that the patient's prospects are gloomy indeed, for the best further advice that his authors have given him is to open a vein in a remote part in order to lessen the flow of blood to the wound, or, this failing, to endeavour to act through the sufferer's imagination, by turning his attention from the injury and then telling him cheerfully that "the bleeding is no more, and that he was but fleemed for his health," for thus, his natural strength is reinforced and the blood is stanched—at least, so says Jerome of Brunswick. The hæmorrhage at last arrested, our surgeon would dress the wound with a restrictive salve composed perhaps of dried earth-worms in powder, bole armeniac, camphor, oil of roses, and sundry other ingredients—an excellent prescription of Jerome—and he might insert a drainage-tube of reed or animal membrane—the windpipe of a rabbit perhaps—after the manner of Roger and the Four Masters. Most of this we should esteem a weakly surgery in the nineteenth century, and it would have been equally despised by the Greeks in the early part of the Christian era, but our mediæval surgeon nevertheless did good in his generation, and his faults were those of omission rather than of commission. His main defects

of education were the unsatisfactory state of his physiology and pathology, and his imperfect knowledge of practical work-aday anatomy: but it was an intellectual disqualification that formed the most serious bar to his progress—an ineffable confidence in the soundness and sufficiency of his own learning and practice. For him all the reasonable potentialities of his art were comprised within the two covers of the compilation of Guy de Chauliac. If indeed there was a single weak point in his armour of self-satisfaction, it was an unconfessed misgiving that any stroke of his knife might bring upon him a rush of blood which he could not see his way to arrest, or, having checked it, to prevent its return so soon as reaction set in, or when his cautery sloughs were cast off; and his only way to silence inward reproach was to evade as far as possible all operations which exposed his patient to danger and himself to discredit. It would be painful to guess at the number of lives that have been sacrificed within the historical period of surgery by this ineptitude, either through hæmorrhage that the merest tyro could now control with ease, or through diseases which were allowed to go on to the bitter end because they appeared less terrible than their only remedy, the knife of the surgeon.

At the present day, when, with our knowledge of the course of the vessels and our armament of forceps, elastic bandages, tourniquets, and the rest, we are able to remove an entire limb with less blood-letting than our forefathers would cheerfully undergo in due season as a tribute to general principles of sanitation, we are apt to think harshly of the terrors of the old-time surgeon; but before risking an injustice it is well we should remember what Charles Kingsley said to a person who was declaiming against the stupidity of the idolatrous heathen. "Let me tell you, sir," he blurted out with his impetuous stammer, "that if you had had a chance you would have done the same and worse. The first idols were black stones, meteoric stones. And if you'd been a poor naked fellow, scratching up the ground with your nails, when a great lump of pyrites had suddenly half buried itself in the earth within three yards of you, with a horrid noise and smell, don't you think you'd have gone down on your knees to it and begged it not to do it again, and smoothed it and oiled it, and any-

thing else?" The application is plain. We, thanks to the inspiration of a master mind, and the thoughtful researches of a few able experimentalists, have learned what to do, but had we lived 500 years ago and been confronted with a mighty blinding gush of blood from the wound that we ourselves had made, we might have gone down on our knees before it, figuratively at least, and dabbed it with useless styptics, and pushed red-hot irons into it, or poured on boiling pitch, or anything else, just as Aëtius and Paulus and many another good man did ages before us. So we will be thankful, and not arrogant, since we know better.

I have now spoken of the surgical knowledge at the close of the Middle Ages, in the hands of a man of good general education and one who has profited by the best opportunities of professional training within his reach. Of such men there were many in Italy, where surgery was always an honoured pursuit; a few in France, where the Universities of Montpellier and Paris taught the Græco-Arabistic medicine, and where the purely surgical College of St. Côme (founded in the thirteenth century) had done some useful work under Lanfranchi, the Milanese; but there were none of any note in Germany, except in Strasburg, where Jerome of Brunswick, led the way, or in England since the time of John Arderne. Nine tenths, or perhaps we should say ninety-nine hundredths, of the surgery of Europe was under the administration of a very different set of persons. During the earlier centuries of the Middle Ages the practice of medicine and surgery had almost everywhere fallen partly into the hands of the priesthood and partly into those of illiterate quacks, and in either instance had generally reverted to prehistoric methods. Very few men were competent to read the Greek classics; there were no Latin translations of the Greek masters of medicine until the eleventh century, when Gariopontus introduced some compilations, mostly Galenical, into Salerno; and the Jews, who knew Arabic and were for a time the only persons able to profit by the writings of the Arab physicians, were placed under every possible disability by the fierce opposition of the Catholic clergy.

Under these circumstances, the knowledge of the monks down to the twelfth century could rarely be anything but

scrappy and empirical, and their surgical operations probably did not go far beyond blood-letting and tooth extraction, in which they were aided by the barbers. Their operative surgery, however, such as it was, had to be abandoned after the edict of the Council of Tours in 1163—for the hieratic conscience that provoked and fomented the murderous "holy war" of the Crusades then saw fit to pronounce that bloodshed was incompatible with the divine mission—and this section of their medical practice fell naturally enough into the unsanctified hands of their tonsorial assistants, who thereupon began to combine various surgical ministrations with the trimming of hair and beards. It was not in the nature of things that barber-surgery should flourish quickly, but as time went on a number of men who showed more aptitude for the work than their fellows, attained sufficient reputation to justify them in sacrificing altogether the comfortable certainties of barbery for the treatment of such injuries and external ailments as fell to their lot. Some of the number were drafted into the army as field surgeons, and in Germany were expected to shave and trim the hosts as well as to look after their bodily complaints; in France and England also the military surgeon appears to have had a similar origin, but he was less degraded, and his ambition rose. The important surgical College of St. Côme in Paris (1260) is said to have been established by barber-surgeons who had acquired experience and influence in the wars, and the same may be said for the Fellowship of Surgeons in London nearly two centuries later (1435), and the ephemeral Faculty of Physicians and Surgeons which preceded it by about a dozen years, but in both countries the founders, emancipated from barbery, forgot their origin, and by ignoring the claims of their former fellows, and encroaching upon the privileges of the physicians, raised a combination against themselves, which defeated their efforts to elevate the standard of their profession. The day of the barber-surgeon was yet to come, but his connection with his associates, the barbers, soon became a nominal one—the barbers proper, in the Barber-Surgeons' Guild, being separated from the members who practised surgery even as early as the fifteenth century, and the latter were put back into the ranks of the barbers only when

found wanting in the higher calling. We shall see how, step by step, the low-born, uneducated craftsmen gained strength, and how at length they became the history makers of modern surgery, while Italian surgery, which had so long maintained the dignity of the art and deserved a better fate, was destined to fall into the background. We may, if we wish, claim our descent from fellowships of surgeons like those dedicated to St. Cosmus in France and England, but it was not to the members of these associations, but to the unsophisticated barber-surgeons, that we owe the first of those advances which have raised surgery from a craft to a science.

The position of women in relation to surgery at the close of the Middle Ages calls for some remark. In the school of Salerno they were admitted to all the privileges of the sterner sex, and one, Maestra Trotula, in the eleventh century, attained great reputation and wrote a book, but her surgical contributions were of no importance; there is evidence, moreover, that women were admitted to practise in London in the fourteenth century; and in the Dublin Guild of Barber-Surgeons, established in 1446, they were also entitled to share in the privileges of the foundation. In addition to these strictly professional 'persons' there was a good deal of amateur surgery prevalent amongst women of the higher classes throughout Europe. We learn through mediæval stories, such as 'Amadis de Gaule' and the Arthurian romances, that the heroine was usually ready to bind the wounds of her lover and to apply the soothing balm; and knowing what we know of the practice of the professed leech, we may perhaps consider that the knight might have fallen into far less safe and gentle hands.

With the modern era began the new life of surgery. As we have seen, the promise afforded by the condition of the art at the close of the Middle Ages was very slender, but influences were already at work that were destined to replace the surgery of tradition and booklore by a science founded on personal experience and new observations. The revived study of the Greek and Roman writers, facilitated by Latin translations and spread abroad by the new-born press, did

something to improve the literary tone of our surgical records, but it lent a kind of polemical armour-plating to certain grave errors of practice, and on the whole, the veneration for the classical authors during the sixteenth century was a stumbling-block in the way of progress. On the other hand, the study of anatomy by dissection of the human subject, commenced in Italy in the fourteenth century, had really laid the foundations for a new departure, but the good effects were not to become apparent until long after. The real forces which urged the surgeon of the new period forward, almost in spite of himself, were two great calamities: the use of firearms and the importation of syphilis. Cannon were employed by Edward the Third against the Scots as early as 1327, and even at an earlier date by the Arabs, but it is probable that the enemy were more frightened than hurt by the maiden essays of these primitive 'manjaniks' and 'crakys of war.' At any rate it was not until the second half of the fifteenth century that gunshot wounds were sufficiently common to call for any special surgical notice.[1] Syphilis, which invaded Europe about 1494, soon carried its ravages swiftly through all countries and all classes, and as its more obvious manifestations were external, its treatment fell mainly into the hands of the surgeons, and especially the barber-surgeons, who were the chief representatives of dermatology at the time. Here then were two surgical conditions in which trade nostrums and the lore of the ancients were alike useless, and consequently the surgeon was forced to think for himself, and to draw the iconoclastic conclusions that there were some things which Hippocrates, Galen, and Avicenna did not know. Another advantage which he derived was that many patients of rank and influence were thus brought under his care and their gratitude often aided his social elevation.

The early study of gunshot wounds did not lead to good

[1] The first surgical account of gunshot wounds is contained in the 'Bünd Ertzney' of Heinrich von Pfolspeundt, written about 1460, but never printed. A short chapter of the 'Hantwirckung der Wundartzney' of Jerome of Brunswick, published in 1497, is devoted to the same class of injuries. Other surgeons who added to the early literature of the subject in the first half of the sixteenth century, were the Italians Benedetti, Vigo, Berengario da Carpi, and Maggi, and the Germans Hans von Gersdorff and Felix Würtz.

results. Most of the observers, struck with the ugly aspect and unfavorable complications of the new injuries, came to the conclusion that they were poisoned, and that the venom must be got rid of before the damaged tissues could be brought into a condition for repair. Hence the orthodox practice was either to draw a hair rope along the track of the missile, to inject boiling oil, or in other ways to complete the work of the enemy's guns and cannons. The first to demonstrate the fallacy of this dismal theory was a French barber-surgeon named Ambroise Paré, and his suspicion of the truth was the result of one of those accidents of which only clever men are able to take advantage. On one occasion on the battle-field, he tells us, the supply of boiling oil ran short, and consequently many of the wounds were left without the customary torture. The next morning when, with great misgivings, Paré visited the patients, whom he expected to see writhing under the effects of the deadly virus he had left to work its will, he found them apparently better for his neglect than others before them had been for his attentions.[1] An ordinary man might at once have applied a double dose of the omitted medicament to compensate for lost time, but Paré preferred to leave well alone, and moreover decided to repeat the fortuitous experiment. This he did with confirmatory results, and thus was taken the first great step on the road to surgical success—to avoid doing harm.

Military practice brought a new demand upon the surgeon's skill. In the old days the injuries, which were inflicted mainly by cutting and pointed instruments, seldom appeared to call for amputation as a means of preventing death, and hence the operation was rarely attempted in the field during the Middle Ages. With the introduction of firearms, however, the circumstances were altered, and in spite of the dangers attached to the remedial use of the knife, the sur-

[1] "La nuict ie ne peus bien dormir à mon aise pensant que par faute d'auoit cauterisé ie trouuasse les blessez (ou i'auois failly à mettre de ladite huile) morts empoissonez, qui me fit leuer de grand matin pour les visiter. Où outre mon esperance trouuay ceux ausquels j'auois mis le medicament digestif [used in place of the boiling oil] sentir peu de douleur à leurs playes sans inflammation & tumeur, ayans assez bien reposé la nuict: les autres ou l'on auoit appliqué ladite huile, les trouuay febricitans avec grand douleur, tumeur, & inflammation aux enuirons de leurs playes" ('Œuvres,' p. 264).

geons perceived that in some instances the life of the wounded man depended upon the removal of the mutilated limb. The mortality from hæmorrhage in the earlier operations must have been terrible, for the boiling pitch, red-hot irons, styptic pellets, and other means of arresting the loss of blood, were quite inadequate, even though the amputation was rarely carried above the knee or elbow. But a new thought struck Ambroise Paré like an inspiration from Heaven—to seize the divided vessels and tie them with all possible speed. It is this one idea that was destined to change the aspect of surgery. The right of Paré to the discovery has often been disputed, because the Greek surgeons had already employed the ligature for wounded vessels, and the mediæval surgeons had quoted the Greeks, but the writings of the ancients appear to show that they did not tie arteries divided in the course of an amputation, but, like their successors, trusted mainly to the actual cautery. However this may be it is certain that at the time Paré knew nothing whatever about the Greeks, for he was a self-taught man, and his opportunities for the acquisition of book learning did not come until late in life. His two methods of ligature were far from perfect, but in his hands and those of his pupils they served their purpose, and were so incalculably superior to all the hæmostatic measures that went before, that it is almost with amazement we find his successors for nearly a hundred years after his lesson obstinately clinging to the heated irons and other barbarities of their early forefathers. Even the English surgeons of the Elizabethan period, good men and true, who knew what Paré had done, held aloof from his practice ; but to do them justice it must be said that while refusing to imitate his practice they refrained from abusing the man and his method, as did some of his own countrymen who were incapable of understanding either.

The restoration of lips, ears, and noses that had been subjected to penal mutilation was a very ancient branch of surgery, and one in which the Hindoos had attained great proficiency, perhaps before the days of Hippocrates. The operations, however, fell almost entirely to specialists. In the fifteenth century the most famous practitioners of this

section of surgery were the Brancas, father and son, of Catania, in Sicily. The Hindoos had restored the nose by means of flaps taken from the forehead or cheeks, and the same methods were employed by the Greeks and Romans, but the younger Branca invented the plan that became familiar a century later through the writings of the Bolognese surgeon Tagliacozzi, and has recently been once more revived: to borrow the new skin from the arm of the patient. It is said that some of the Italians resorted to the buttock of another person for the raw material, and from this practice arose the popular superstition adverted to in Butler's well-known verse, ingeniously applied in modern times by Edmond About in 'Le Nez d'un Notaire,' attributing to the transplanted integument in its altered situation a mysterious sympathy with the individual from whom it was taken :

> "But when the date of Nock was out,
> Off dropped the sympathetic snout."

The practice of the Brancas was carried on through the sixteenth century by a family of Calabrian surgeons, and Tagliacozzi, who is often looked upon as the father of plastic surgery, did little more than repeat and publish the operations that had long been traditional in his country.

The remaining steps in this century related to improved methods of removing stones from the bladder (the Marian and the supra-pubic operations), to the radical cure of hernia without castration, and to the surgical relief of intestinal strangulation in hernia. The hero in the latter case was a French surgeon, Pierre Franco, who was also the second performer of lithotomy by the supra-pubic incision.[1]

The chief honours of the new surgery down to the end of the sixteenth century rest principally with the Frenchmen Paré and Franco. England played but a small part in the actual progress of surgical science, and yet there were some sturdy members of the Barber-Surgeon's Guild who rendered very good service to their countrymen. The first of these was Thomas Vicary (1495—1561), who held the post of

[1] The first 'high' operation was performed in the fifteenth century, by a French specialist named Colot, who obtained permission to make the experiment upon a condemned criminal. It was successful, although it is said that the intestines escaped from the wound.

sergeant-surgeon to Henry the Eighth, Edward the Sixth, and Queens Mary and Elizabeth, and that of senior surgeon to St. Bartholomew's Hospital, and who was also the first master of the London Barber-Surgeons' Company : a man who won the respect of all his associates and did much towards the social elevation of his calling. He was the author of a book on anatomy, perhaps the worst compilation of the kind ever published, but it was sanctified by the good intentions of the writer, and won a *succès d'estime*, reaching a second edition in 1577, sixteen years after his death.[1] His contemporary, Thomas Gale (1507—1586) an army surgeon, was the author of the first book on general surgery printed in our country,[2] a work of great interest ; and a little later three other military surgeons, William Clowes (1540—1604), John Woodhall (born c. 1569), and John Banister (1546—1608), contributed importantly to surgical literature ; Clowes by a treatise on gunshot wounds and syphilis, Woodhall by a noted volume on surgery, and Banister by a curious work on anatomy 'For the Utilitie of all Godly Chirurgians within this Realme' (1578).

The position of the surgeon, always high in Italy, remained in a very unsatisfactory state in Germany (except in Strasburg), and was only beginning to mend in France and England. In France the improvement was mainly due to the influence of Ambroise Paré, who had won the personal regard of his monarch and of all the great men of the time who knew and could appreciate his mind and character. In England the result was due to the consolidation and augmenting power of the London barber-surgeons. The guild, which had been incorporated as early as 1462, received from Henry the Eighth in 1540 a new and important charter ; an act commemorated by Holbein in the great picture which is still in the possession of the Barber-Surgeons' Company. The Fellowship of Surgeons, who had made a valiant effort to elevate the practice and

[1] A reprint, with commentaries, has recently been issued by Mr. Furnivall for the Early English Text Society.

[2] The first surgical writings by an Englishman appear to be those of John Arderne, a contemporary of Chaucer. An interesting account of his life and works by Dr. J. F. Payne will be found in the 'Dictionary of National Biography.' His treatise on 'Fistula in Ano' has been printed, but the rest remains in manuscript, a copy of which may be seen in the British Museum.

social estimate of surgery, found themselves unable in the absence of any leaders of commanding position or ability to attain their end, and judiciously determined to take advantage of the moment to join their waning forces with the waxing power of their old and once despised rivals. The term "barber-surgeon" was now indeed a misnomer for the surgical members of the Company. Even in the charter of 1462, the barbers, the older element in the association, were passed over in silence, and before the time of the newly constituted company in 1540, although the nominal connection was unsevered, the distinctions between surgeons and barbers had become as great as that between lawyers and shoemakers.

In 1556 further powers, as an examining and licensing association, were conferred upon the Company. This admission of the position of the surgeons as a scientific body was pregnant with results, but for a long time, although they were no longer classed, as in the acts of the early part of the century, with bakers, brewers, and scriveners there was still much to be desired. Even the good Thomas Gale, writing in 1563, admitted that the surgeons of his time were rude and unskilful, and tried chiefly to accumulate prescriptions. The company, however, were doing their best to further the cause of medical education by giving periodically a course of public demonstrations of anatomy in the hall, lasting for three days and finishing, according to the fashion of City Companies, with a dinner. It was ordained too, in 1566, that apprentices to members of the livery should not be taken unless they knew how to read and write and were approved by the masters as 'Clene in person and Lymm' and otherwise 'mete for the exercise of their craft.' Examinations for all candidates for a licence to practise surgery in London became necessary after 1582 (as in the Neapolitan realm after 1134), but the examiners were not too exacting in their demands, for temporary and partial licences were granted—for a consideration—even to quack specialists; and the bone-setter, rupture-cutter, or cataract-coucher, might obtain his certificate in his own branch for a year or term of years if able to satisfy the masters that he was not utterly a knave and impostor. The internal government of the association was very paternal. Like the College of

Physicians, they had the power to despatch a faulty member to gaol until he had purged his offence, or in milder cases to administer a reproof or impose a fine. An example is afforded by the records of the Barber-Surgeons Company for 1575.[1] In this year a member of the livery had not only allowed his patient to die, but scurrilously ventured to proclaim that the fatal disease had been communicated to him by his wife. The maligned woman having complained to the Company of the libel the surgeon was summoned before the masters, and in the presence of the court, and of the plaintiff and her neighbours, who were called for the purpose, was ordered to ask forgiveness upon his knees. This he did ; rising, let us hope, a wiser and a better man. Again, we read under the date of April 3rd, 1576 :

"Here was a complainte against William More by one Henry Dobbyns, for that he did not cure his sonne, but made the same worse." A little later, on May 10th, comes the result, eminently satisfactory to all except to the defendant, that "More was ordered to meddle no more with surgery, on account of his ignorance."

Another business of the court was to effect an arrangement when a member, having, in accordance with a common practice of the time, taken a fee in advance for a promised cure, failed to carry out his share of the bargain ; and many quaint entries with reference to such matters might be quoted: for example: "William Clowes was charged by William Goodnep for not curing his wife 'de Morbo Gallico,' and yt was awarded that the saide Clowes sholde either geve the said Goodnep XXs or elles cure his saied wief, which Clowes agreed

[1] I must here take the opportunity to express my thanks to Mr. Sidney Young, of the Barber-Surgeons' Company, to whose courtesy I am indebted for access to many curious extracts from the books of the Association, and for much valuable information; and to recommend all who are interested in the history of English surgery to read his forthcoming volume, 'The Annals of the Barber-Surgeons.' Other extremely interesting details will be found appended to Mr. Furnivall's reprint of 'Vicary's Anatomy' (Early English Text Society); in the 'Memorials of the Craft of Surgery,' by John Flint South, edited by Mr. D'Arcy Power; in a contribution by Dr. Norman Moore in the 'St. Bartholomew's Hospital Reports,' vol. xviii, "The Physicians and Surgeons of St. Bartholomew's Hospital before the time of Harvey;" and in 'London (Ancient and Modern) from the Sanitary and Medical Point of View,' by Dr. G. V. Poore.

to pay the XXs, and so they agreed and eche of them made acquittence of the other."

Before the end of the sixteenth century the Company exercised a censorship over the writings and opinions of its members; but we do not hear that they were as Rhadamanthine as were the College of Physicians, who actually summoned before them in 1559 one Dr. Geynes for having contended that certain propositions of Galen were wrong, and constrained him under penalty of a summary committal to gaol to recant his heretical and daring assertions. A wholesome law established by the guild in a very early period of its existence is also deserving of notice, the compulsory presentation by the members of any patients who were in danger of death, or otherwise progressing unfavorably; this 'presentation' being actually a consultation with experienced masters of the livery, who gave free of expense such advice as the case appeared to demand. Mr. D'Arcy Power tells us that the custom has survived by descent in a modified form in St. Bartholomew's Hospital.

The development of the new surgery was accompanied by a renewed study of the older writings. Careful translations from the Greek surgical authors were published during the fifteenth century, that of Guido Guidi, or Vidus Vidius, ('Chirurgia e Græco in Latinum a se conversa,' 1544), being one of the best known, and containing admirable woodcut illustrations; and while men like Berengario da Carpi, Vesalius, Eustachius, and Fallopius in anatomy, and Paré and Franco in surgery, worked to find out something that the ancients did not know, the great body of the more learned portion of the profession were divided, after the manner of the natives of Lilliputia, into Bigendians and Littleendians, quarrelling with wrath profane as to whether the Greek or the Græco-Arab was the preferential extremity at which to attack the egg of medical theory. We are informed in Dr. Payne's learned article on the History of Medicine in the 'Encyclopædia Britannica' that in the sixteenth century a prodigious schism divided the whole Faculty upon the question of a rule of venesection,—whether the blood should be drawn from near to the affected organ, as advised by Hippocrates and Galen, or at a distance, according to the Arabs; and a learned professor of the University of Paris,

then a stronghold of Græco-Arab authority, having advocated the cause of the Greeks, was expelled the city, and his method formally prohibited by Act of Parliament. The controversy lasted for many years, involved several universities, brought down the thunders of papal and imperial intervention, and ended in the downfall of Arab medicine. For a long time, however, the works of the ancients were for the great majority of practitioners invested with a claim to veneration little short of that accorded to Holy Writ, and we may imagine what a shudder passed through the marrow of the orthodox when a firebrand like Paracelsus swore roundly that there was more learning in his shoe-buckles than in all that Galen and Avicenna ever wrote. Fortunately the cause of reform had a less suspicious champion than the half charlatan, half genius Switzer in the Florentine surgeon Benivieni, who, at the beginning of the sixteenth century, had proclaimed the doctrine that surgery should rest upon the basis of anatomical, pathological, and clinical observations, and that the moderns ought to set to work to extend the paths of science instead of pacing to and fro for ever the narrow and unfinished roads left by their predecessors, and did his best to establish the principles upon which depend the progress and prospects of the surgery of to-day. Even he was not the first to express dissatisfaction. Guy de Chauliac long before had made sarcastic remarks upon the mediæval compilers, who, he said, "se suivent comme les grües;" but the person who is clear-sighted enough to perceive a fault is not always strong enough to correct it, and Guy himself, although he often diverged from the line of flight a little to one or other side, seldom lost sight of the tail of his leader. From this distance we see him only as a crane of somewhat stronger pinion than his companions, but essentially one of the Græco-Arabistic flock.

Surgical education in this century, despite the opposition of a few dissentients, went on in the old groove at Naples, Montpellier, and elsewhere. Some teaching was carried on outside the universities in surgical associations, such as that of St. Côme in Paris, and under the auspices of the Barber-Surgeons Guild in London, but it was of the most meagre description, and the hospitals were very little, if at all, utilised

for clinical instruction. St. Bartholomew's and St. Thomas's Hospitals were both furnished with new charters in the course of the century, but a modern student of St. Thomas's would have some difficulty in picturing to his imagination his *alma mater* in the Elizabethan days, when the governors kept a whipping-post and stocks within the precincts, and used them too, not indeed for pupils, for we do not know that there were any, but as a moral corrective for patients who had undergone at the expense of the charity the cure of such physical maladies as were contracted through their own vices, and as a warning to erring sisters who had offended against the canons of the institution.[1] St. Bartholomew's, under Vicary, Clowes, and Woodhall, may have been in better state, but it is melancholy to reflect upon the waste of material in these nobly purposed asylums.

Many of the surgical writings of the sixteenth century are very quaint and original both in style and matter. Up to this time it had been the custom to write medical works in Latin, but the barber-surgeon had no great affection for the dead languages, and wisely, though apologetically, ventured to express his views in the vulgar tongue. It was a great scandal, but Paré, Woodhall, Clowes, and the others outlived it, and the students of the French and English literature of this time have reason to be grateful for at least two remarkable examples of the transition from mediæval pedantry to the naturalistic and vigorous diction that stamped the dawning era of independent thought.

A perusal of the English group of surgical authors, of whom Clowes may be taken as the best type, is singularly refreshing after a course of the insufferably flatulent and arid discourses of many of the earlier and contemporary writers on medical subjects. Picturesquely figurative expressions strike us at every page; curious scraps of learning alternate with amusing colloquialisms and with practical information of the most matter-of-fact character; the author repeatedly takes the reader into his confidence, and naïvely

[1] See Mr. Rendle's account of St. Thomas's Hospital from 1200—1553, in the Transactions of the Royal Society of Literature' for 1882. He notes that one sister was ordered "twelve stripes, well laid on," but does not mention the offence which was met by so drastic a remedy.

recites his personal quarrels, quoting verbatim his victorious arguments against his unlucky opponents; he explodes abruptly into furious diatribes against quacks and critics, especially the latter; he proffers with anxious elaboration his reasons for every departure of practice which he considers peculiar to himself; sometimes he displays a foreshadowing of the puritanism of a later age; and occasionally, like Mr. Silas Wegg, he allows himself to drop into poetry—of the doggrel order.[1]

The palm, however, in this period falls to Ambroise Paré as a surgical writer. He makes no pretence to elegance of expression, but his sentences are bright and logical and disclose not only an unsurpassed fund of observation and experience, but a kind of erudition which the prentice barber could scarcely have been expected to acquire. Like Vicary, he was a devout Christian, and from time to time improves the occasion by introducing pious reflections in prose or verse. He was, however, one of those who find no pleasure in turning the cheek to the smiter, for he could not restrain himself from bringing down rhetorical sledge-hammers to crush such insects as those who reviled him for his arrogance, indiscretion, temerity, and brutality in adopting the ligature in place of caustics, and for his presumption in doubting the virtues of unicorn's horn and mummy, all in face of the verdict of the ancients, with whom, said one "it is better that we should err than that we should judge rightly in opposition to their opinion."[2] By dint of much shrewd common sense he was able to dispose of many of the absurd super-

[1] Thus Mr. Clowes, whose muse is practical as well as fervid:

"When valiant Mars, with brave and warlike band,
In foughten field with sword and shield doth stand,
May there be mi(d)st a surgeon that is good,
To salve your wounds, and eke to stay your bloud.

To cure you sure he will have watchfull eie,
And with such wights hee meanes to live and die;
So that againe, you must augment his store,
And having this, he will request no more."

[2] "Qu'il faut bien que la licorne ait de grandes vertus veu que tous les sages demeurent entre eux d'accord des admirable proprietez d'icelle. Et que partant il faut acquiescer a leur autorité, attendu qu'il vaut mieux faillir avec les sages que bien opiner contre leur opinion."

stitions of his time, but he could not entirely shake off the bonds of credulity, so that while he rejects the nonsense concerning the properties of the "corne de licorne" he accepts without question the evil interposition of Succubi and "noueurs de l'aiguillette," and inserts in good faith the portrait of 'a very virtuous lady of great and ancient house,' who bore thirty-six children at a birth; as well as that of a wonderful pig of Liége with a human head and shoulders; but on the whole he was in advance of his time in this respect rather than behind it. In studying, however, his writings and those of the English barber-surgeons, it is easy to find some excuse for the irritation that then excited the minds of readers who had been accustomed to the terseness and grave dignity of the ancient texts. The style was undoubtedly of a less elevated type, and the soundness of the matter had yet to bear the test of general experience; hence we need not be surprised to find that two or three generations passed away before the work done by the stout pioneers of the sixteenth century was estimated at its real value.

This stirring time in the history of surgery was destined to be followed by a long period of inaction. The *seventeenth century*, although made resplendent by Harvey's discovery of the grand physiological secret of the circulation of the blood, which had escaped the research of Herophilus, of Galen, and all the great intellects of the Alexandrian school, was for surgery a kind of mediæval interval in the modern period, and there was little to record in the shape of progress beyond some further improvements in the treatment of gunshot wounds induced by the experience of two army surgeons, Magati, an Italian, and Wiseman, an Englishman. On the other hand, the work done in the past century was almost a dead letter. Wiseman, it is true, employed the ligature in his civil practice, but in field amputations he still preferred the actual cautery, and was less bold in his surgery than in his truthfulness and honesty; while in France the countrymen of Paré clung to the ancient methods as contentedly as though the great barber-surgeon had never written a line.

The origin of the famous lateral operation for the removal of stones from the bladder at the close of this term, as

related by Heister, is interesting as a picture of the time, and as an indication that the surgeons of the period were less bigoted and illiberal than they are sometimes represented to have been.

In 1697 an obscure monk named Jacques Beaulieu or Boulot, now known as Frère Jacques, came to Paris, in a very miserable condition, but bearing testimonials as to his skill in cutting for stone. At first his claims were treated with ridicule, but his earnestness and the evident integrity of his motives persuaded the surgeons to allow him to perform a test operation upon the dead body, which he accomplished with great celerity by means of a lateral incision corresponding in its essential features to that in use at the present day, but guided only by an ungrooved sound.[1] This won for him permission to repeat the operation in public upon a young tailor, and he extracted the stone so successfully that the patient was walking about without any bad symptoms before three weeks had elapsed. His skill was now so triumphantly demonstrated, at least to the satisfaction of the public, that patients flocked to him in ever increasing numbers, and the crowd of spectators attracted by his operations was so great that it was necessary to have a guard of soldiers to keep order. But when the first enthusiasm had died away it became apparent that the friar was a bad surgeon after all. He did not prepare his patient in any way, and he took no trouble over them afterwards, saying that it was sufficient for him to have extracted the stone, "God would cure the wound." After his first successes the mortality ran very high and most of those who did not die were grievously tormented by fistulas and other troubles, and consequently his reputation passed away almost as quickly as it came; not completely, however, for he continued to practise at Strasburg and elsewhere for many years, and after amending his method by employing a grooved staff in place of a common catheter (an improvement initiated by the French surgeons, Mareschal and Méry) his results underwent a material change for the better. It was in all probability to this empiric that we owe

[1] A previous and better operation devised by a German surgeon, Fabricius Hildanus, however, merits the honour of having anticipated the modern lateral method, but it appears to have attracted little attention.

the operation from which such brilliant results have been attained by Cheselden and others in later times.

Several other interesting items fall to the credit of the seventeenth century, some of them foreshadowing the greater achievements of a subsequent day.[1] There were, however, two operations which in their frequent and indiscriminate application reflected grave discredit upon both medicine and surgery. These are venesection and trephining. The use of venesection as a therapeutic measure had been strongly advocated by most of the ancients, and it was they who framed the rules, almost Chinese in their complex wrong-headedness, which guided the choice of the vessel to be opened and the circumstances of temperature, season, and phases of the moon under which it was supposed to be eligible or ineligible, but it was reserved for the physicians of the sixteenth and seventeenth centuries to carry their principles to the extreme of logical absurdity. Botallo in the sixteenth century had not only introduced free bleeding in all fevers, but even taught that the periodical use of the lancet was a desirable measure to ensure the conduct of a normal pregnancy to its natural conclusion, and in the period under consideration phlebotomy, supported by purgation on the

[1] The chief of these are the invention of the principle of the tourniquet by Fabricius Hildanus and its further development by Morel (1674); the revival of tracheotomy by Fabricius ab Aquapendente; the first recorded gastrostomy for the removal of a foreign body from the stomach by Shoval (1635); the excision of the tongue by Pimpernelli (1658); the application of direct compression to aneurysmal tumours by Wiseman; the ligature of the femoral artery in the groin for a false aneurysm in the thigh by Severino; the performance of myotomy for deformities by Minnius; the revival of lithotrity by Ciucchi, whose instrument anticipated that of Civiale; the revival of sequestrotomy by Scultetus; the formation of a single long flap in amputation by Lowdham (1679); the transfusion of blood in anæmia and other conditions by various experimenters (on the dog by Wahrendorf in 1642, on a criminal by Wren in 1656); the treatment of strangulated hernia by dilatation of the constricting tissues by Thevenin (1696); the operation of external urethrotomy; digital compression of aneurysm after ligature by Bottenhuit (1658); the closure of vesico-vaginal fistula suggested by Roonhuysen (1663); the recognition by Wiseman of the advantages of primary amputation in gunshot wounds; the explanation of the seat of cataract by Quarré and Lasnier; the researches of Aselli and Pecquet on the lymphatic system; and the description of the valves of the veins by Fabricius ab Aquapendente, who thus left the discovery of the circulation of the blood almost open to induction.

right hand and emesis on the left, was the very palladium of medicine. We all know the biting references of Molière to the depletory practices of his time, and the recently published Life and letters of Charlotte Elizabeth, the sister-in-law of Louis the Fourteenth, offers a notable illustration in the treatment of her husband, the Duc d'Orleans, who on his deathbed was bled three times, was forced to swallow eleven ounces of emetics, a quantity of Schaffhouse water, and two bottles of "English drops." It appears almost superfluous to tell us that this was his "lit de mort." In surgery also the same practices were very much abused, but as a rule with less evil results, because the patients were for the most part in a better state for recuperation than those of the physician. Even Wiseman, who was distinguished above all things for his strong common sense and freedom from prejudice, did not rise above his time in this respect. To take a case at random from his works. He tells us of a young man who, having been "shrewdly cudgelled about the pate," was naturally found somewhat bruised as to his cranium, and not a little confused as to his ideas. To remedy this condition of things he was bled first in one jugular, then in the other, purged freely, his shaven head rubbed with embrocations, poulticed, and fomented; his diet reduced to water-gruel and "panado," and his body "kept soluble with clysters" for seven long days, after which his surgeon "gave him more liberty and purged him." "And thus," says Wiseman, "all external contusions may be happily cured."

As for the trephine, it was a common practice to prescribe the operation for the cure of headache, and Philip William, Prince of Orange, is said to have had seventeen circles of bone taken out of his cranium at different times by order of his physicians. In surgery, too, it was employed freely and without any definite principle, and although surgical reports are silent as to the evil results that may have followed, there can be little doubt that much needless mischief was occasionally perpetrated.[1]

[1] One interesting anticipation of modern practice is, however, found in a small volume of little general merit, by Hugh Ryder, published in 1685. An injury over the motor area of the left hemisphere of the brain had caused a paralysis of the right arm, head, and tongue. This condition persisting, the trephine was

The old superstition of touching for the "king's evil" still survived both in England and France. Wiseman, as body-surgeon to Charles the Second, was perhaps officially bound to believe, and this he did, as he did most things, with much heartiness. After writing a long and intelligent account of the manifestations of the disease, he considers it necessary to apologise for mentioning the ordinary resources of the Faculty in the same page with the sovereign cure, saying that he is only induced to speak of the former at all because "the infidelity of many in this fantastical age and the want of opportunity of others, doth deprive them of this easy and short remedy," and he proceeds to lament "the weakness of medical ability when compared with that of His Majesty, who cureth more in one year than all the Chirurgians of London have done in an age." A still more curious belief was prevalent at the same time—that a wound could be cured by medicinal anointment of the weapon with which it was inflicted. Purmann, of Breslau, the author of some big surgical tomes, records his experience and observations as proofs conclusive that this measure was superior in its results to the customary treatment, and there is good reason to believe that, to this extent, he was perfectly right.

There was still but little that merited the name of surgical pathology, and the almost universal acceptance of the fancies of the humoralists barred the way to a better knowledge. For example, a cancer is termed by Wiseman "an adustion of humours which, upon an over-concoction, or rather broiling, grow retorrid and sharp." Again, although the itch insect had been detected by Avenzoar in the twelfth century, scabies was described by Wiseman as due to "a vicious ferment in the skin which makes a concoction and leads to a conversion of the nutritious juices thither conveyed, into the disease," and was accordingly to be treated by purgatives and blood-letting; and even in a condition so familiar to the surgeon as hernia no distinction was made between the femoral and inguinal forms. In most other surgical diseases it was the

applied on the seventh day, setting free a quantity of black grumous blood, which blood, explains Ryder, "by pressing upon the meninges and sending forth putrid steams, had been the occasion of the ill symptoms," and the symptoms at once disappeared.

same ; there was either complete ignorance, the complaint not being segregated from others which bore a superficial resemblance to it, or its real nature was obscured by verbose attempts at definition which conveyed no precise meaning either to the teacher or the pupil.

The position of the surgeon in England, France, and Germany underwent little change, but he no longer submitted as meekly as before to the scornful domination of the physician. In London the barber-surgeons were constantly subjected to fine for administering internal remedies upon their own responsibility and contrary to the provisions of their charter ; and in 1632 the physicians trespassed so far upon the autonomy of the surgeons as to obtain an Order of Council prohibiting them from performing any major operation, except in the presence of a physician. The Company, however, procured the repeal of this law three years afterwards, and although they were unable to overturn the rule with regard to medicine, they were ready to fight against its enforcement. In the barber-surgeons' records for 1590 there is a significant entry, "Whereas there hath been an abuse offered to Mr. ffenton Bynns by Dr. Goodall for giving internal medicines in a case of surgery, ordered that, if the College of Phisitians doe arrest Mr. Bynns, that he shall be defended at the cost of the Company."

Medical education remained in an unsatisfactory state, except in Italy, where a system of clinical instruction in hospitals had been inaugurated. In England the training of the average surgeon was lamentably deficient, and the tests of fitness for practice were necessarily of anything but a searching kind. It is to be feared too that the examinations of the Barber-Surgeons' Company were not always conducted in such a way as to avoid the appearance of evil, for in 1611 "James Blackborne applied to be admitted a brother of the Company and to practise surgery, and promising to pay £10 for his admission, and to make the examiners a dinner." He passed. Nearly a century later, in 1709, it was found necessary to order that no examiner in surgery should in future accept any gratuity from, or be treated or entertained in any manner by, any sea surgeon or surgeon's mate, either before or after examination, on pain of being removed

from his offices as an examiner and assistant of the Company." The picture given by Smollett, in 'Roderick Random,' of his examination at the Surgeons' Hall, in the early part of the eighteenth century, is a melancholy appendix to the damning confessions in the records of the guild.

Bad as was the condition of surgery in England, it was little, if any, better in France and Holland; and in Germany, Russia, and Scandinavia the genuine barber-surgeon of the fifteenth century still plied his double trade. Under such circumstances it is scarcely a matter of surprise that the not very numerous body of half-educated surgeons should be supplemented, and often supplanted, by an army of quacks of both sexes. In some countries the evil was almost ludicrous, but we reach the bathos of surgical practice in Breslau, where, as we learn from the 'Chirurgia Curiosa' of Purmann, the popular authority amongst rich and poor for the treatment of spinal deformities was the wife of the hangman.

With the *eighteenth century* there began a vigorous upward struggle in which almost every country in Europe took honourable share. It was an era made illustrious by anatomists like Albinus, physiologists like Haller, pathologists like Morgagni, surgical observers like Méry, Petit, and Pott, operators like Cheselden, Chopart and Desault, and writers with the gift of critical compilation like Heister, Richter, and Benjamin Bell; but the one intellect which dominated all others was that of John Hunter. Hunter was not only the greatest surgeon of his century, but he was great amongst a company of giants. And yet his greatness did not lie in the same direction as that of the men who preceded and were associated with him. He was not an inventor of surgical procedures—the only operation linked with his name had been performed by a Greek surgeon more than a thousand years before his time—but of surgical principles. His were the genius of infinitely multiplied observation and experiment, the capacity for evolving from the great mass of results laws and generalisations for the guidance of succeeding generations, and the determination to know the truth so far as human ability and patience could attain it; that disposition, as he himself expressed it, "to distrust opinions and to examine every subject for himself," which is the

very essence of scientific research. Anatomist, in the widest sense of the term, zoologist, botanist, physiologist, and surgeon, he brought the whole range of his knowledge to bear upon the broadest questions of surgical disease. To quote from one of the most eloquent and philosophical of the noble tributes to his memory that are rendered by our leaders yearly at the college of Surgeons,[1] "He was, and is, beyond and above all surgeons, a philosopher in surgery. His idea of the subject of his thoughts was far more adequate than that of other men. He was supreme in the scope and method of his work. He understood much better than those around him how to engage in the interpretation of Nature; he knew best how to approach and to disclose truth. For he not only understood that the problems which lay immediately before him were of all the most complex and difficult to solve, but he could see also that they were not isolated or dependent ones. He saw in the necessary relation in which they stood to others the only means by which they could be worked out, and on this understanding he resolved to investigate the questions he desired to answer." There is no time to dwell in detail upon the contributions which he made to surgical science, but all who would understand the vast scope and penetrating quality of his mind should digest the 'Treatise upon the blood, inflammation, and gunshot wounds,' and visit the great offspring of his brain and energy, the Museum of the College of Surgeons, where they may study the man in the concrete results of his work. The enormous fund of material brought together by his colossal industry and now collected in a worthy storehouse was enough to make him famous had he never penned a line, but his writings show us that all this was but the means to a greater end.

To give a list of the great surgeons of the eighteenth century and of their achievements would lead us too far, and I must confine myself to a very brief summary. First and above all we owe to John Hunter the foundation of experimental and philosophical pathology. The range of operative surgery has widened in all directions owing to the enterprise and ingenuity of surgeons like Cheselden, Sharp,

[1] Hunterian Oration, by Mr. Savory, 1887.

Chopart, and Desault, who guided by anatomical knowledge attained a confidence, swiftness, and dexterity that would have appeared little less than marvellous to the men of the previous age. In their hands amputations were extended for the first time to the largest joints, new and ingenious methods of incision were devised, and the operation once the terror of the surgeon became his pride, while conservative surgery in the form of the old Greek operations of resection of diseased joints and removal of buried portions of dead bone was revived to limit the sacrifice of limbs that might yet be made useful. What this means will be understood by those who have read the account of tubercular disease in Wiseman's works and have learned how the sufferers even under the best attendance that the age could furnish were tortured needlessly by the surgeon and drugged uselessly by the physician till they died. It was the surgeons of the eighteenth century who finally banished to the limbo of well-meant abominations the red-hot irons and vitriol pellets of their predecessors; and in their time too were laid the foundations of a bolder practice in the future by many isolated operations, experiments upon the lower animals, or well-considered suggestions which were to be remembered and utilised in more modern days.[1] There

[1] Amongst the many things may be named the first operation for suture of cleft palate by Le Monnier; nerve sections for neuralgia by Mareschal (c. 1710), (revived by Haighton in 1798); puncture of the bladder through the rectum by Pouteau (1760), and above the pubes by Méry (1701); œsophagotomy for the removal of a foreign body by Goursault (1738), inguinal colotomy, proposed by Littre (1720), and carried out by Duret (1793); lumbar colotomy proposed by Callisen, but not performed until the present century; ovariotomy attempted by Houston (1701); intubation of larynx practised by Desault; sequestrotomy revived by Davis; resection of intestine by Ramdohrius; the invention of the tourniquet in its perfected form by Petit; digital compression of the main artery for commanding the circulation in a limb by Desault; the treatment of aneurysm by proximal and distal ligature by Anel, Brasdor, Desault and Hunter; the ligature of the larger arteries, such as the external iliac (1796) and carotid (1798), by Abernethy, and the axillary by Desault; tenotomy of the tendo-Achillis for club-foot by Lorenz (1784); excision of the lower end of the rectum by Paget (1739); the closure of vesico-vaginal fistula by Voelter (1722); extraction of the cataractous lens by Petit at the suggestion of Méry; the perfection of lateral lithotomy under Rau, Méry, Cheselden, and others; perineal lithotomy by the "lithotome caché" of Frère Côme; the revival of supra-pubic lithotomy by

were science, courage, and consummate skill; and only two things were wanting to bring the surgery of the end of the eighteenth century near to perfection, but for these we were forced to wait through two generations.

Surgical literature was enriched in the eighteenth century by many classical works amongst which those of Hunter, Petit, Pott, and Haller take the first place as original contributions, while those of Dionis, Sharp, Heister, Callisen, Camper, Richter, and Benjamin Bell and others ministered importantly to the diffusion and progress of surgical knowledge.

Surgical education, which, except in Italy, could scarcely be said to exist in any systematic form during the seventeenth century, underwent a rapid development. In France the fusion of the surgeons of St. Côme and the former barber-surgeons into the Académie de Chirugie by Mareschal in 1731, with Petit as its director, and the subsequent foundation of the 'École pratique de Chirurgie' by Chopart and Desault, raised the art to a position of dignity it had never before occupied. In England, the hospitals of St. Bartholomew, St. Thomas, and St. George established medical schools to the great advantage of British surgeons but to the great dissatisfaction of the Barber-Surgeons' Company. The surgeons shook off their nominal association with the barbers in 1745 (the Dublin surgeons following in 1784) and secured a charter for a new company which opened with Ranby as master and Cheselden and Sandford as wardens, and in 1753 enlisted Pott and Hunter as the first masters of anatomy, finally assuming in 1797 the title of Royal College of Surgeons. In Edinburgh the Company of Surgeons, and afterwards the University, obtained the services of Alexander Monro (the first of the name) as Professor of Anatomy. In Berlin a Medico-Chirurgical College was established in 1714 to which in 1726 was joined a School of

John and James Douglas (1710) and Cheselden; rectal lithotomy proposed by Hoffmann (1779), and performed on the dead subject by Martin (1786); excision of knee by Filkin (1762), of shoulder by White (1769), and previously by Vigaroux and David; amputation at hip-joint by La Croix (1748), and at shoulder by Morand the elder. The immense advances in the scientific comprehension of syphilis, diseases of the spine, hernia, and many other surgical ailments would require a volume to relate.

Clinical Surgery. In Vienna a school was founded for training army surgeons. Lastly, in America, the first systematic teaching of surgery was instituted at Philadelphia towards the close of the century.

Although so much was effected, still more remained to be done. The work of teaching indeed had only commenced; for although those who loved knowledge might find a way to acquire it, there was no pressure to force those who loved it not to fit themselves for the exercise of their profession, and there were few of the facilities that now tempt the indifferent to acquire the affection which a better acquaintance with the subject might arouse. For the clinical and practical study of surgery money was as essential as capacity and industry; dissection and experimental operations were luxuries for the few, and even the fortunate ones were usually compelled to purchase these opportunities by a secret and degrading traffic; and the obstacles in the way of acquiring a due knowledge of anatomy and pathology were for the many quite insurmountable. Mr. Henry Power has given us a graphic picture of the results of the strong repugnance cherished by the non-professional classes for the examination of the human body after death, during and before the time of Hunter[1], and this repugnance had to be combated at a later time by the memorable speech of Lord Macaulay, which won its success, not as a plea for the advancement of science, but as an appeal to the selfish instincts of the people.

At length we reach the *nineteenth century*, but I cannot hope to convey an adequate idea of the marvellous progress which has taken place in these ninety years that separate us from the period just reviewed. We were told by Sir William Mac Cormac in his recent thought-stirring oration upon Abdominal Section at the Medical Society, that, seventy years ago, Baron Boyer, a noted French surgeon, announced that surgery had then "completely or almost completely reached perfection," but in the light of our present knowledge, how do we regard the surgery of 1820? With feelings very similar perhaps to those with which our posterity in 1960 will look back upon the surgery of 1889. For the surgeons, however, we have nothing but admiration. There were

[1] Hunterian Oration, 1889.

giants in those days, more in number than I can venture to name ; but much of their strength was unavailing, because of a great need to be supplied and a grave defect to be perceived and amended. The need was a means of annulling pain during surgical operations ; the fault was an imperfect conception of the virtue of cleanliness.

Even as early as the Middle Ages there had been attempts to compass the insensibility of the patient while under the hands of the surgeon. Henbane and other narcotics administered by draught or inhalation were used by the surgeons of the school of Bologna in the thirteenth century. Intoxicating drinks were tried from time to time with the same object. Bleeding to syncope was a proposition of this century, and mesmerism, that "recent foolery," as South termed it in 1847, found energetic advocates, but none of these expedients held their ground. Operations were performed while the patient was in a state of full or exaggerated consciousness, and the surgeon indeed required what Celsus thought essential for his calling, a mind intrepid, and not to be moved by the cries of the sufferer.

It was not until 1841 that ether, which is said to have been known from the thirteenth century, was first employed as a surgical anæsthetic by Jackson, of Boston. Chloroform, discovered by Soubeiran in 1821, was first used a few years afterwards in experiments upon the lower animals by Charles Bell and Flourens, but its introduction to surgeons dates from its employment by Simpson in 1847. The gift, however, was not received with universal acclamation, and for many years after it had been accepted by the general body of the profession there were distinguished operators who considered the insensibility of the patient dearly bought at the expense of certain dangers and inconveniences which the drugs were found to entail, but at this moment no argument is necessary to prove to the surgeon how immense is the boon conferred upon his art by the power that anæsthetics have given him. Humanity in its more immediate and obvious bearings was the motive that prompted their first adoption, but something lay beyond the simple suppression of suffering, and we now see that many of the greatest achievements of modern surgery would have been scarcely possible,

or at any rate would be so far restricted in their application as to lose nearly the whole of their immense value to mankind, were it not for chloroform and ether. Anæsthetics, moreover, are inducing an alteration in the type of the surgeon. Before their introduction, the two chief requisites for distinction in the practical section of surgery were the power of controlling the natural instincts of sympathy amidst the shrieks and struggles of the patient, and the peculiar dexterity which combined extraordinary swiftness with precision of manipulation ; but these qualities are no longer indispensable, and others of a higher kind have arisen in their place. The brilliant operation of the past, measured by the watch, like a foot race, to test the record, doubtless had some immediate advantages in its day, but it was often far more impressive for the spectator than profitable for the ultimate welfare of the patient, and we are well rid of it.

The conquest over pain by the suppression of consciousness was a great feat, and the agents which effect this can never be entirely superseded ; but the next desideratum was a local anæsthesia that left the mind intact. This had been sought in the last century by the nerve-compressing machine of Moore (1784) and partially realised by the freezing apparatus of Richardson in 1860, but the discovery of the properties of cocaine by Koller five years ago have established a new starting point, and it is probable that before long the principle may be so far developed that the ground held by ether and its allies will be reduced within comparatively narrow limits.

The great defect of surgery, however, was an imperfect conception of the nature of and necessity for cleanliness. I do not imply that surgeons in those days were unclean in the coarse sense of the word. A few of them, and great men too, actually were so, but the majority observed the common rules of purity with the natural instinct of the educated mind. But this was not enough. The surgeon who would carefully wash his hands and felt a pride in the brightness of his instruments would too often assume in the time of action a garment saturated with the decomposing filth of a thousand operations; and even those who shunned the "operating coat" did not dream of the menagerie of infective organisms that

might lurk in unexplored recesses of the finger-nail, or in the catacombs of the abstersive sponge, or circulate in the atmosphere of the ill-ventilated ward. Some here present have witnessed the terrible penalties attached to our ignorance, and know that the great hospitals designed for the cure of disease were often the worst centres for its dissemination, and that in certain of these charitable institutions the most lethal forms of blood poisoning would follow like a nemesis in the track of the surgeon's knife. It was only last year that Dr. Cullingworth expressed with characteristic force of language the same story of the vengeance of outraged purity in the gynæcological practice of former days; and we know there was a time when the fear of operation-disease practically closed many parts of the body against the knife of the surgeon, when a patient with a ruptured bladder or internal strangulation could only hope for the euthanasia of narcotism, or a woman with a tumour of the uterus or ovary must bear her infliction till death released her. To open the abdomen then was regarded as foolhardy temerity, and so perhaps it was, and would be now, had we not learned the source of our danger and the way to escape it. It is hardly necessary to utter the name of the surgeon who first taught us the lesson, and established a new era in the history of surgery; for it has become incorporated with a word that is synonymous with antisepsis. There are distinguished members of our profession who still deride what they call "antiseptic surgery," but they have not aimed at the right mark. The essence of antiseptic surgery is not the employment of chemical antiseptics, although these are convenient adjuncts; it is the exclusion of septic germs; and it may be said without hesitation that no surgeon has ever been successful who has not consciously or unconsciously taken the necessary precautions to achieve this end; and that those who attained great results in earlier days did so because they had worked out the essential truth for themselves and had carried it into practice.

The practical surgery of the present century may be divided into two parts, the first belonging to the term of more than sixty years anterior to the introduction of antiseptic principles, the second extending from this to the present day,

and owing its characters to the combined influences of antisepsis and anæsthetics.

The surgery of the pre-Listerian period may be classed with that of the eighteenth century. Its leaders were men of the same strain as Cheselden, Desault, and Chopart,—sound anatomists, ready of resource and invention, cautiously daring in endeavour, and wonderfully expert in manipulation—so far as operative surgery went, in the technical sense, they had almost if not quite reached finality. To speak only of those who have passed away, the names of Astley Cooper, Liston, Syme, Fergusson, Dieffenbach, Malgaigne, and many others of note will be suggested under this heading. With these were associated accomplished experimental physiologists, like Charles Bell; great organisers of military surgery, like Larrey; men gifted with the genius of compilation and annotation, like John Flint South; and advanced philosophers, like Joseph Henry Green. But it is dangerous to enter upon exemplification, for every name suggests so many others with equal, or almost equal, right to stand in a list of the great representatives of surgery that he who attempts it is unlikely to satisfy himself or others. In this time the work of the eighteenth century was carried on without material divergence from the lines laid down by Pott, Desault, and their contemporaries. In surgical pathology new and great observers arose to carry on the work begun by Hunter; diseases hitherto unrecognised were carefully described and classified; in operative achievements there was no limit to enterprise, except in connection with the three great cavities of the body, which were still almost closed against the surgeon; and all the departments of science lent aid in providing new instruments for research, for diagnosis, and for remedial use. Beyond this the foundation of noble museums, like those of Hunter and Dupuytren; the great development of teaching in the medical universities and colleges of Europe; the removal of the restrictions imposed upon direct anatomical investigation by popular prejudice; the formation of societies and associations for the interchange of ideas and for the organisation of research; and above all, perhaps, the rise of a scientific and scholarly medical press, conferred a power that was nobly employed

by its first owners, and will profit succeeding generations in constantly multiplying ratio. All these constituted integral parts of a grand scheme of education, and although the system is still incomplete, we have only to look back a few decades to realise the prodigious strides that have been made towards the realisation of the surgical ideal.

The work achieved by the present generation in the antiseptic period has already formed the subject of more than one address, and now, in the few minutes that remain, can only be adverted to in the briefest manner. We have an enormous improvement in the safety of almost every operation that involves an open wound of any kind, and nearly all the natural or morbid processes attended with a breach of surface have shared in the benefit; a great numerical increase in all operations, owing chiefly to the removal of the patients' apprehensions of suffering; an ever growing prevalence of conservative over what may be called destructive surgery; and the invention of new operative procedures, many of which have involved the opening up, to the saving hand of the surgeon, of regions hitherto almost untouched. Thus we have an abdominal surgery, including free exploration of the cavity whenever the symptoms of disease or injury warrant the step, the abscission of tumours, the extirpation of diseased viscera, the removal of abnormal concretions interfering with the functions of important organs, and many other undertakings once thought beyond our reach. We have a new thoracic surgery, and we have a new surgery of the brain and spinal cord. To these might be appended a vast number of additions and improvements in our resources, which are not susceptible of easy classification, and must be passed over unenumerated.

Such a review, incomplete though it is, might at first sight incline us towards the self-congratulatory frame of mind attained by Boyer seventy years ago, but his example should warn us to profit bv the pithy counsel of a latter-day sage—never to prophesy unless we know. Seriously, however, it should be obvious that there are no limits to progress in our art; that every advance in Anatomy, Physiology, and Pathology may draw the labours of the surgeon into new channels, and that new discoveries in general science may

with every year provide better means for the diagnosis and treatment of surgical disease. In manual skill it is indeed probable that we have little more to gain, but we may be certain that the hand will always find sufficient cunning to follow the behests of the mind.

What are the lessons that we learn from the history of Surgery and from our knowledge of the men who have made and are still making it? The motive powers that directed Paré, Hunter, and Lister, as they directed Vesale, Harvey, and Darwin, have been, firstly, *Industry*—that kind of purposeful industry which produced the thirteen thousand preparations of John Hunter; secondly, *Observation*—the observation which penetrates to the inner meaning of the fact noted, and knows how to profit by error and mischance as well as by successful experiment. Thirdly, *Scepticism*—not the shallow disbelief in all that lies beyond our reason and experience, but the scientific scepticism that always bears in view the possibility of error in all opinions, our own, and especially our own, as well as those of others, and prompts the application of observation and experiment to confirm or correct them so far as lies within the scope of our powers and opportunities. Lastly, *Honesty*—the honesty that should lead every one of us to give his best work to science and mankind, to confess his failures when the lesson may be profitable to others, and to despise the struggle for unmerited reward.

An introductory address is often held to be incomplete without some words of advice to those of the audience who are just about to enter upon their career, but I must confess to a very slender confidence in the efficiency of moral aphorisms, and I will in conclusion only ask you to treasure the words of a poet of our own day—

> "In God's clear sight, high work we do,
> If we but do our best."

REPORT

OF THE

IN-PATIENT DEPARTMENT FOR DISEASES OF WOMEN

FOR THE YEAR 1888.

By CHARLES J. CULLINGWORTH, M.D., F.R.C.P.

This being the first occasion on which there has appeared a separate report of this department, a few prefatory words of explanation will, perhaps, not be out of place. In previous years all cases under the care of the obstetric physician have been included in the Medical Report, whilst the statistics of all operations performed by him have been entered in the report of the surgical department. This made it somewhat difficult to ascertain exactly either the number and character of the cases under treatment, or the number, nature, and results of the operations performed, in the obstetric department, in any given year. When, on the occasion of my taking charge of the department, in April, 1888, the obstetric physician was, for the first time, permitted the privilege of performing the operation of abdominal section (in cases under his own care), it became a serious question whether it was desirable that the work of a department already largely surgical, and now sure to become increasingly so, should con-

tinue to be registered under the head of medicine. Moreover, it appeared to me that my colleagues on the staff, to whose generosity I was indebted for the concession to which I have just referred, might very reasonably expect me to furnish a statement, showing what use I had made of my privilege, and with what results. These considerations led me to obtain leave to arrange for the separate registration of the obstetric in-patients, and the issue of an independent report similar to that of the eye department. My main difficulty in carrying this out has arisen from the fact of there being no officers in the obstetric department corresponding to the ophthalmic clinical assistants, upon whom the work of registration would naturally devolve. The resident accoucheur only holds office for three months and can therefore only be made responsible for the registration of the cases discharged during his term of office. For the present, then, I propose to charge myself with the preparation of the annual departmental report, obtaining such help from my present or past officers as may be from time to time available. This year I have the pleasure of acknowledging much valuable and willing assistance, in the compilation of the statistical tables, from one of my resident accoucheurs, Mr. C. H. James.

Fully alive to the fact that no change of system can take place without entailing some inconvenience on those who have occasion to consult these records, I have, by adopting as far as practicable the nomenclature and methods of tabulation already in use, endeavoured to minimise that inconvenience to the utmost. Where it has been necessary to extend the classification, I have adhered to the nomenclature of diseases of the Royal College of Physicians.

Following the example of the medical and surgical registrars, I have appended detailed abstracts of a few of the more interesting cases, or groups of cases, that have occurred during the year. I have also inserted a special table of ovariotomies, and a brief account of all the cases of abdominal section not included under that heading. Where the details of a case have already been published, the fact is indicated and the reference given. For the whole of this part of the report I am myself directly responsible.

Table I.

General Statement of Patients in Adelaide Ward (Female).

Number of Beds in Ward (including small Ward)		21
Number of patients in Ward, Jan. 1st, 1888		12
„ „ „ Dec. 31st, 1888		14
„ „ discharged or who died during 1888:		
		Rate per cent.
Cured	106 ...	50·0
Relieved	69 ...	32·4
Unrelieved or other causes	31 ...	14·5
Died	7 ...	3·1
Total	213 ...	100·0

Average number of days of each patient's stay in hospital—26·45.

Table II.—*General Table of Diseases.*

DISEASE.	Number of cases.	Age.						Duration of residence.					Cured.	Relieved.	Died.	Unrelieved.	REMARKS.
		10–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mos. 1–2	Above 2 months					
DISEASES OF OVARIES.																	
A. *Cyst.*																	
a. Simple and multiple	8	...	3	3	1	1	...	...	...	3	5	...	8	...	...	...	2 affecting right ovary, 3 affecting left, and 3 double. All removed by operation. See Special Table.
b. With intracystic growth	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	Removed by operation. See Special Table.
c. Dermoid	2	...	...	2	...	...	...	...	...	...	1	1	2	...	...	...	Removed by operation. See Special Table.
B. *Displacement.*																	
Prolapse	2	...	2	...	...	...	...	1	1	...	...	...	...	2	...	...	
DISEASES OF FALLOPIAN TUBES.																	
Hydrosalpinx	5	1	1	3	...	...	...	...	1	...	3	1	...	4	1	...	1 case operated upon. See Special Abstracts.
Salpingitis	1	...	...	1	...	..	...	...	...	...	...	1	...	1	...	...	
DISEASES OF UTERINE LIGAMENTS AND OF THE ADJACENT PERITONEUM AND CELLULAR TISSUE.																	
Hæmatocele—																	
a. Intraperitoneal	9	...	7	2	...	...	...	...	2	2	3	2	3	6	...	...	For notes of 4 of these, see Special Abstracts.
b. Extraperitoneal	2	...	2	...	...	...	...	...	...	2	...	...	2	...	...	...	1 in left and 1 in right broad ligament.
Inflammation—																	
a. Pelvic peritonitis	13	3	6	4	...	...	...	...	4	2	5	2	4	9	...	...	
b. Pelvic cellulitis	7	...	5	2	...	...	...	...	2	1	3	1	4	2	...	1	
c. Abscess	5	...	...	4	1	...	...	...	1	...	3	1	...	3	2	...	

DISEASES OF UTERUS AND CERVIX.																	
Hypertrophy of cervix	2	...	...	2	...	...	...	...	1	...	...	1	2	...	...	...	
Endometritis	15	...	7	5	3	...	...	...	5	3	6	1	8	6	...	1	
Subinvolution and chronic metritis	3	...	1	...	2	...	...	...	...	...	2	7	...	3	...	...	
Erosion	6	...	2	3	1	...	...	...	1	1	3	1	1	5	...	...	
Fibroma	3	...	1	2	...	...	...	...	...	2	1	...	...	3	...	...	
Polypus	11	...	1	8	2	...	...	...	5	4	2	...	10	1	...	...	
Carcinoma of corpus	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	
Carcinoma of cervix	7	...	...	2	4	1	...	1	...	3	3	...	...	2	...	5	
Adenoma of cervix	1	...	...	...	1	...	...	...	...	...	1	...	1	...	...	...	Removed.
Retroversion	9	1	5	1	2	...	...	...	2	6	1	...	3	5	...	1	
Anteflexion	2	...	2	...	...	...	...	...	...	2	...	...	1	1	...	...	Congenital.
Retroflexion	11	2	1	6	2	...	...	...	6	3	1	1	4	5	...	2	
Prolapse	1	...	...	1	...	...	...	...	1	...	...	...	...	1	...	...	
Hæmatometra	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	See Special Abstracts, under "Retained Menstrual Coagula."
Stenosis of os internum	1	...	1	...	...	...	...	...	...	...	1	...	...	1	...	...	Hysteria.
Laceration of cervix	2	...	1	...	...	...	...	...	1	...	1	...	2	...	...	...	
Growth in Douglas's pouch connected with uterus	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	1	
Retro-peritoneal cyst projecting from behind uterus	1	...	...	1	...	...	...	...	1	...	...	...	...	...	...	1	See Special Abstracts, under "Abdominal Section."
DISEASES OF VAGINA, VULVA, &c.																	
Vaginitis	1	...	...	1	...	...	...	...	1	...	...	...	1	...	...	...	
Transverse septum of vagina	1	...	...	1	...	...	...	...	...	...	1	...	1	...	...	...	Dilatation. See 'Lancet,' April 13th, 1889, p. 726.
Vesico-vaginal fistula	1	...	...	1	...	...	...	...	...	1	...	...	1	...	...	...	See Special Abstracts.
Hypertrophied nymphæ	1	...	...	1	...	...	...	...	...	1	...	...	1	...	...	...	Removed by operation.
Chronic ulcer of vulva	1	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...	
Mucous cyst of vulva	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	Cured by incision.
Growth on vestibule	1	...	...	1	...	...	...	...	...	1	...	...	1	...	...	...	Removed by operation. Tumour consisted microscopically of inflammatory tissue; ? syphilitic.
Urethral caruncle	1	...	...	...	1	...	...	...	...	...	1	...	1	...	...	...	Removed by thermo-cautery; erysipelas.

Table II—*continued.*

DISEASE	Number of cases.	Age.						Duration of residence.					Cured.	Relieved.	Died.	Unrelieved.	REMARKS.
		10–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Above 2 months					
DISEASES OF VAGINA, VULVA, &c.—*continued.*																	
Malignant of vulva	3	...	...	1	...	...	2	...	...	1	1	1	1	...	1	1	Growth removed by thermo-cautery in 1. 1 died of broncho-pneumonia.
Epithelioma of urethra	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	1	
Syphilitic ulcer of vulva	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	Also stricture of rectum. Case only remained in ward 1 day.
Suppuration of vulvo-vaginal glands	1	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...	Incised and scraped.
Rupture of perinæum	8	...	2	4	1	1	...	1	3	1	2	1	4	1	...	3	3 operated upon, all successful; of the rest, 1 pregnant, 1 subject of pelvic inflammation, 1 healed without operation, and 1 unsuitable for operation.
PREGNANCY AND ITS ACCIDENTS.																	
Pregnancy	3	...	2	1	...	...	...	2	1	...	...	...	...	...	...	3	1 admitted for supposed hæmorrhage; 1 gave history of swelling for 12 months.
Accidental hæmorrhage	4	...	3	1	...	...	...	...	2	2	...	...	2	1	...	1	Abortion in 2 cases.
Retroversion of gravid uterus	4	1	1	2	...	...	...	2	1	1	...	...	4	...	...	...	See Special Abstracts.
Vomiting of pregnancy	1	...	...	1	...	...	...	...	...	1	...	...	1	...	...	...	6 months pregnant; spontaneous abortion.
Early pregnancy, with death of fœtus	1	...	...	1	...	...	...	...	1	...	...	...	...	...	...	1	
Abortion	4	...	1	2	1	...	...	2	...	1	...	1	3	...	1	...	2 cases had septicæmia, of these 1 died.
Carneous mole	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	Removed.
Blighted ovum	2	1	...	1	...	...	...	...	1	1	...	...	2	...	...	...	1 simulated polypus of uterus with hæmorrhage.
Hydatiform degeneration of chorion	1	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	

Confinement—impacted breech	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	stracts.
Partial placenta prævia . .	1	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...	See Special Abstracts, under "Vesico-vaginal Fistula."
Puerperal eclampsia . .	2	...	2	...	...	...	...	1	...	1	...	...	1	...	1	...	Labour induced.
Hæmorrhage from retained fœtal products	8	...	6	2	...	...	...	1	2	4	1	...	7	...	...	1	1 died in two days of tubular nephritis and hypostatic congestion of lungs. For details of both cases see Special Abstracts.
Puerperal pyæmia . . .	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	The case unrelieved was ? fibroid of uterus.
Subinvolution	1	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...	Went out at own request.
VARIOUS.																	
Dysmenorrhœa . . .	2	...	2	...	...	...	...	...	...	1	1	...	...	2	...	...	1 with menorrhagia, and 1 with urinary calculus.
Amenorrhœa	2	1	1	...	...	...	...	...	2	...	...	...	...	1	...	1	
Menorrhagia	3	...	3	...	...	...	...	...	1	1	1	...	2	1	...	...	1 due to constipation; 1 ? hæmophilia.
Metrorrhagia	2	...	...	1	1	...	...	...	...	...	2	...	1	1	...	...	
Climacteric	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	1	Only in one day.
Dyspareunia and hysterical vomiting	1	...	...	1	...	...	...	...	...	...	1	...	...	1	...	...	
Hysteria	3	...	2	1	...	...	...	1	...	2	...	...	2	...	...	1	
Syphilis	1	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	
Leucocythæmia, with enlarged spleen	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	Sent up from country as ovarian tumour. Transferred to medical ward.
Gastritis	2	...	1	1	...	...	...	1	...	1	...	...	2	...	...	...	
Peritonitis (general) . .	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	1	Transferred to Elizabeth.
Abdominal pain and distension	1	...	...	1	...	...	...	...	1	...	...	...	1	...	...	...	
Fæcal accumulation . .	1	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	With ulceration of anal mucous membrane.
External hæmorrhoids . .	1	...	...	...	...	1	...	1	...	...	...	...	1	...	...	...	With irregular menstruation.

Table III.—*Operations performed during the year.*

Abdominal section:		
Cystic adenoma of ovary	9	
Dermoid cyst of ovary	2	
Abscess in broad ligament	1	
Serous perimetritis	1	
Sub-peritoneal cyst	1	
Hydrosalpinx	1	
Tubercular disease	1	
Ectopic gestation	1	
	—	17
Polypus uteri (fibroid 4, mucous 3, placental 1)		8
Removal of cervix uteri (supra-vaginal)		1
„ „ (infra-vaginal)		3
Trachelorrhaphy		1
Vesico-vaginal fistula		1
Transverse septum of vagina		1
Removal of hypertrophied nymphæ		1
Epithelioma of vulva		2
Vascular tumour of meatus urinarius		1
Lacerated perinæum		3
Total number of operations		38

Note.—Of these operations, seven were performed during the first three months of the year, when the department was under the charge of Dr. Gervis, viz.:

Polypus uteri (mucous)	1
Removal of cervix uteri (infra-vaginal)	2
Trachelorrhaphy	1
Epithelioma of vulva	1
Vascular tumour of meatus urinarius	1
Lacerated perinæum	1
	7

Table IV.—*Causes of Death in Fatal Cases.*

Septicæmia after miscarriage	1
Secondary cancer of inguinal glands after operation for epithelioma of vulva	1
Iliac abscess (no p.m. permitted)	1
Puerperal eclampsia	1
Tuberculosis: pelvic abscess	1
Septic peritonitis after abdominal section	2
Total number of deaths	7

Abdominal Section, including Ovariotomy.

The accompanying Table of ovariotomies represents all the cases of ovarian tumour that presented themselves; in no instance was an operation declined either by the patient or by myself. All the operations were performed antiseptically, *i. e.* the abdomen of the patient and the hands and arms of the operator and his assistants were well washed and scrubbed with soap and hot water, afterwards rinsed in clean water, and finally in solution of corrosive sublimate (1 in 1000); all instruments and other appliances, such as drainage-tubes, material for sutures and ligatures, &c., were placed in a solution of carbolic acid (1 in 20) before and during the operation, while the sponges, which were all new ones that had been specially prepared and disinfected for many hours, were wrung out of equal parts of recently boiled water and solution of carbolic acid (1 in 20). Carbolic spray was employed in some of the earlier operations and discarded in the later ones. As I have had occasion to say elsewhere, I regard the spray as chiefly valuable on account of its moral effect. Its pomp and circumstance impress all engaged in the operation with the fact that antiseptic precautions are being observed. In four out of the eleven cases the peritoneal cavity was irrigated with hot boracic acid solution before the wound was closed; in the remaining cases the toilet of the peritoneum was accomplished with clean, new, aseptic sponges. The glass drainage-tube was used in eight cases, and left in for periods varying from eighteen to ninety hours (see Table) according to the amount of discharge, the dressings being changed and the fluid removed from the tube by the pipette twice a day so long as the tube was kept in. No ill effect followed the use of the tube in any instance. In one case (No. 2) an india-rubber drainage-tube was employed, there being no glass tube at hand of sufficient length. In two cases the wound was at once closed, drainage not being considered necessary. The ligatures for the pedicle and for arrest of bleeding were of silk, the sutures for the abdominal wound of silkworm gut. In only one case (No. 8) was there suppuration in the suture-tracks, the patient having been septicæmic for many weeks before the operation. The dressings used were extremely

simple: powdered iodoform dusted over the wound after tying the sutures, two gauze-bags of sublimate wood-wool, a layer of cotton-wool, and a many-tailed flannel bandage. Where drainage was not used, or, having been used for the first day or two, had been suspended, the dressings were left undisturbed for several days. For the first few days the patients were placed in the small isolation ward, with special day and night nurse; they were then removed into the general ward and attended to by the ordinary nursing-staff. The sutures were usually taken out at the end of a week, when the wound was covered with a fold of boracic lint, kept in place by strapping. Always, on the day of operation, and longer if there was any sickness, nothing but ice was allowed, then barley-water for twenty-four hours in gradually increasing quantities, and after that, beef-tea or milk and soda-water, according to the patient's liking, until she was able to take light diet at ordinary meal times, which was generally on the fourth day, and even occasionally on the third. The patients were usually allowed to sit up in bed about the tenth or eleventh day, and to leave their bed in about a fortnight.

In nine of the cases the tumours were ordinary cystic adenomata, in the other two they were dermoid cysts. The latter were fully described in the last volume of these 'Reports.' In one of the cases of cystic adenoma (No. 6), in which both ovaries were diseased, there were masses of proliferating growth on the inner surface of the cyst wall, and on one of the cysts there was a small patch of similar growth externally, which probably accounted for the ascites that was present. It will be interesting to observe whether there is any recurrence of the disease in the peritoneum. If there is, and the fact comes to my knowledge, I will note it in a future report.

With regard to the second ovary: in five cases both ovaries were diseased and were removed; in two cases the second ovary was not seen, being concealed amongst adhesions; and in four it was either healthy or but very slightly enlarged, and was left undisturbed.

In one case the patient was in the fifth month of pregnancy; she made quite the best recovery in the series, the temperature never exceeding 99·6°, and after the first twenty-four hours being absolutely normal.

Special Table—*Ovariotomy.*

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and treatment of second ovary.	Glass drainage tube.	Result.	Remarks.
					1888						
1	S. B.	Lambeth	38	M.	April 12	Large cystic adenoma right ovary, smaller of left; sub-peritoneal cyst with short pedicle in Douglas's pouch	Around sub-peritoneal cyst only	See under "Nature of tumour"	90 hours	C.	Temp. usually below 100°, but for 24 hours (4 p.m. 3rd day to 4 p.m. 4th) exceeded, once reaching 101°. Bowels relieved 5th day. Sutures removed 7th day. Up 19th day. Discharged 30th day.
2	A. H.	Lambeth	39	M.	May 10	Dermoid cyst of both ovaries; left suppurating. (For description of specimen by Mr. Shattock, see 'Trans. Path. Soc.,' vol. xxxix, p. 442)	Extensive: parietal, omental, intestinal	See under "Nature of tumour"	India-rubber tube, 44 hours	C.	Had borne 12 children and had 3 miscarriages, the last 3 months ago. Temp. on 4th day rose to 101·6°; after 5th day did not reach 100°. Discharged 22 days. Case published in detail 'St. Thos. Hosp. Rep.,' vol. xvii, p. 139.
3	K. C.	Kennington	23	M.	May 31	Cystic adenoma right ovary, one large cyst of which filled pelvis	None in abdomen; pelvic portion adherent throughout	Not found; lost in adhesions to pelvic wall	43 hours	C.	Temp. only on one occasion (8 p.m., June 5th) exceeded 100°; after June 6th normal. Discharged well in 23 days.

No.	Name.	Residence.	Age.	Civil condition.	Date of operation.	Nature, &c., of tumour.	Adhesions.	Condition and treatment of second ovary.	Glass drainage tube.	Result.	Remarks.
4	A. B.	Chatham	25	M.	1888 June 21	Cystic adenoma left ovary; weight 22 lbs. 6¾ oz.	Firm and vascular to whole of anterior abdominal wall	Slightly enlarged; one small cyst; not removed	18½ hours	C.	Confined, at full term, 2 months before admission. Temp. 1st and 2nd day 100° to 100·8°; 3rd day 98·6° to 99·8°; afterwards normal. Discharged well in 18 days.
5	E. B.	Balham	21	S.	July 23	Cystic adenoma of right ovary, size of ostrich's egg	None	Slightly enlarged; studded with small cysts; not removed	None	C.	Confined 12 months ago; admitted from a Home. Temp. evening of day of operation: 101° at 8, 100° at midnight, afterwards uniformly below 100°. Bowels relieved 7th day. First dressing and removal of stitches 8th day. Up 14th day.
6	E. L.	East Dulwich	58	M.	July 30	Cystic adenoma both ovaries, papillomatous contents; on one, small external patch of papillomata; ascites, 14 pints	Intestinal and mesenteric	See under "Nature of tumour"	20 hours	C.	Highest temp. 101·8°; after 4th day only once reached 100°. Bowels acted 8th day. Sutures removed 9th day. Couch 14th day.
7	M. A. D.	Walworth	43	M.	Aug. 9	Cystic adenoma left ovary; largest cyst containing 7 pints chocolate-coloured fluid; no proper pedicle	Very firm, vascular, and numerous, to omentum, abdominal wall, &c.	Slightly enlarged; studded with small cysts; not removed	18 hours	C.	Highest temp. 100°, attained twice, viz. 2 a.m., Aug. 10th, and 4 a.m., Aug. 11th. Bowels acted 5th day. Sutures removed 8th day.

		Hill				of right ovary forming abdominal tumour, the other connected with same side but entirely separate, lying in Douglas's pouch; the lower one had undergone suppuration, and was discharging through an opening in cervix uteri	to omentum, parietal peritoneum, lower tumour, also to uterus, broad ligaments, and rectum		hours		tion. Recovery excellent. For temp. chart and other details see 'St. Thos. Hosp. Rep.,' vol. xvii, p. 143.
9	S. E. P.	Dorchester	34	S.	Sept. 6	Cystic adenoma left ovary, 9 pints of watery fluid; small mass of sub-peritoneal fibroids of uterus removed same time	None	Seat of tense cyst $2 \times 2\frac{1}{4}$ in., removed	26 hours	C.	Temp. on 2nd evening 100·4°; on no other occasion exceeded 100°. Couch 13th day. Discharged well 27 days.
10	G. T.	Kingston-on-Thames	23	M.	Sept. 27	Cystic adenoma both ovaries	Very numerous, to omentum and broad ligament	See under "Nature of tumour"	44 hours	C.	Temp. on evening of 6th day 101°; otherwise never exceeded 100·4°.
11	M. L. A.	Hemel Hempstead	34	M.	Dec. 6	Single cyst, with remains left ovary on wall; fluid 164 fl. oz.	Parietal, omental	Normal	None	C.	Pregnant; last menstruated 19 weeks ago; fundus uteri level with umbilicus. Recovery uninterrupted. Temp. never exceeded 99·6°, and after first 24 hours absolutely normal. Couch 11th day. Discharged well 21 days. Delivered naturally, of living child, May 2nd, 1889; 41 weeks from last menstruation.

The six abdominal sections, performed for other conditions than ovarian disease, were as follows:

1 case of abscess in left broad ligament.
1 „ serous perimetritis.
1 „ extra-uterine fœtation.
1 „ hydro- and pyosalpinx.
1 „ tubercular abscess (intraperitoneal).
1 „ suppurating retroperitoneal cyst.

Case 1. *Abscess in left broad ligament: abdominal section; abscess emptied and drained* (from notes by H. H. Hulbert).—E. F—, æt. 25, single, servant, admitted February 13th, discharged July 12th, 1888. First had pain in left iliac region November, 1886; swelling first noticed February, 1887, then equal in size to an egg; menstruation gradually became scanty, and ceased in July, 1887. On admission, very ill and emaciated, constant pain, temperature usually 99° to 101°, occasionally 102° to 103°. Tense, hard, obscurely fluctuating tumour, causing slight prominence in hypogastric, left iliac, and lumbar regions, dull on percussion, reaching to within half an inch of umbilicus and one and a half inches to right of median line, closely connected with uterus. Uterus fixed; canal of normal length.

Operation April 5th, 1888.—Median incision, four inches long. Tumour covered with peritoneum, closely attached to uterus (which was pushed over to right); three ounces of pus removed by trocar; opening enlarged; wall quarter of an inch thick, lined with caseous material, which was removed by pressure and scooping with finger; cavity washed out with hot boracic acid solution; wall stitched to edges of abdominal incision; india-rubber drainage-tube inserted. Five days afterwards, temperature normal. Sutures removed on seventh and eighth days. In a month tumour contracted, upper limit two inches below level of umbilicus.

July 12th.—Left the hospital, still wearing drainage-tube; sinus two and a half inches long, about three fluid ounces of pus and mucus escaping every twenty-four hours. Patient stout and well.

September 18th.—Tube still worn. Condition still improving. Discharge slight, thin, and purulent. Menstruated three times. (For sequel to this case see note at end of this report.)

Case 2. *Pelvic peritonitis, encysted effusion of serum, causing supra-pubic tumour; evacuation and drainage* (from notes by H. G. Turney).—A. L—, æt. 20, widow, admitted May 12th, discharged June 20th, 1888. Pain in left iliac region ever since birth of still-born child at seventh month of pregnancy, nearly a year ago. Recently has been feeling very ill, pain increasing. Temperature on admission 102·6°; next eight days 99° to 100·4°. Supra-pubic fluctuating swelling three inches by five inches, dull on percussion, tender to touch. Chain of slightly enlarged, tender glands in left groin. Uterus fixed and displaced to right; tense brawny swelling in left vaginal fornix. Bladder reaches one inch above pubes. Urine sp. gr. 1020, no albumen. Incision under ether in median line, May 21st. Omentum adherent to whole anterior pelvic brim, separated and pushed up. Swelling immediately above fundus of bladder and to left of uterus, covered anteriorly by left broad ligament and above by a process of peritoneum. Tapped: contents, clear straw-coloured serum. Douglas's pouch narrowed by adhesions. Glass drainage-tube inserted to bottom of Douglas's pouch, with which the serum-containing cavity was continuous. Temperature 99° next day; from that time normal. Glass tube removed in forty-four hours, small india-rubber tube substituted on sixth day. Sutures removed eighth day. Slight purulent discharge on twelfth day. Drainage-tube removed thirteenth day. Discharge ceased nineteenth day.

Patient sent to convalescent home, feeling very well, on June 20th. Returned July 17th, stout and well; uterus in middle line much more movable, swelling in left fornix not perceptible.

Case 3. *Extra-uterine fœtation; death of fœtus at the eighth month; abdominal section eight months after; sac formed by left Fallopian tube and left broad ligament; removal of fœtus and a portion of sac, with placenta; remains of sac stitched to edges of abdominal incision; recovery without suppuration.* (For details see 'Trans. Obst. Soc. Lond.,' vol. xxx for 1888, p. 480.)

Case 4.—*Right hydrosalpinx of gonorrhœal origin; abdo-*

minal section; removal of tube and adjacent ovary; death from acute peritonitis in fifty-six hours; autopsy; double pyosalpinx with ulceration and perforation; escape of purulent matter into peritoneal cavity. (For details see 'Brit. Med. Journ.,' July 20th, 1889; also 'Trans. Obst. Soc. Lond.,' vol. xxx for 1888, p. 406 and coloured plate.)

Case 5. *Chronic tubercular peritonitis; exploratory incision; inflammatory thickening of abdominal wall and matting of intestines and pelvic viscera; no abscess found; wound closed; sudden escape of fetid pus from wound a fortnight later; death; autopsy; large abscess between uterus and bladder, communicating with intestine* (from notes by G. E. Anson).—M. J—, æt. 28, married, admitted November 8th, died December 20th, 1888. In hospital ten years ago for cough and hæmoptysis; about the same time had rheumatic fever. Married at age of twenty, no pregnancy. In 1885 and 1886 had a series of attacks of abdominal pain and swelling; on each occasion in bed for two or three weeks. In 1887 was in "Adelaide" for three months (April 7th to July 6th) for parametric abscess, abdominal swelling having commenced suddenly five months previously, with rigors, sickness, and pain. The uterus at that time was noted to be fixed and surrounded by hardness. An opening was discovered in posterior vaginal wall, an inch from roof, through which matter was issuing. This opening was enlarged and found to lead into an abscess-cavity behind the uterus. There was a fluctuating supra-pubic swelling three inches in diameter, which did not disappear on passing the catheter, and which was found to lie behind the uterus.

On readmission, sixteen months later, patient was pale, worn, and emaciated; skin often bathed in perspiration; hands and lips tremulous. Attributes much of present and past illness to violence; has not lived with husband for eight months.

Some dulness, increased vocal fremitus and resonance, with slight rubbing sound after inspiration, at right apex. Abdomen slightly distended; walls rigid, especially over that portion of the recti between umbilicus and pubes. Sense of great tension and resistance in hypogastrium from an inch below the anterior superior spine of right ilium to a point on

the left midway between the anterior superior spine of the ilium and the pubic spine. Dulness on deep and superficial percussion over the lower portion of this area; dulness on light percussion over upper. Rest of abdomen resonant. No tumour perceptible. Enlarged inguinal glands on right. Temperature two degrees higher at night than morning. On vaginal examination, anterior wall of vagina, to within half an inch of anterior fornix, hard and resisting; cervix high up; in front of cervix, a soft area, one and a half inches in diameter, between uterus and bladder (as ascertained by bladder-sound) bounded on each side by tense folds. Lateral fornices normal. High up in posterior fornix scar of opening of old abscess. Uterine canal normal in length, axis straight, parallel with that of patient's trunk.

November 16th.—About an inch below umbilicus in middle line a soft spot detected, half an inch in diameter.

22nd.—Exploratory incision, four inches, middle line. Tissues of abdominal wall, very hard, vascular, and unrecognisable as separate structures. While carefully passing a director with the view of cutting through the deeper part of this thickened integument there occurred a sudden rush of offensive gas. This part of the operation was therefore not proceeded with. In the meantime, an opening was made *above* the umbilicus and an exploring finger introduced. Intestines adherent to abdominal wall over area already described as being specially resistant. No collection of pus detected. Along right side of spinal column, a chain of hard and enormously enlarged glands; enlarged glands also in omentum. Both incisions were closed by means of silkworm-gut sutures; along lower part of wound a small piece of india-rubber drainage-tube was laid between the superficial and deep sutures. This tube was removed in forty-four hours. When the sickness due to the anæsthetic had subsided, *i. e.* after the first day, the patient was in no worse condition than before operation. Bowels acted daily and urine was passed without assistance.

On December 6th several fluid ounces of dark, horribly offensive pus escaped from middle of abdominal incision. This discharge continued more or less up to patient's death on December 20th.

Post-mortem.—Irregular abscess cavity between bladder and uterus, with foul fæcal-smelling contents. No recent peritonitis. Liver adherent by thin fibrous tags to parietal peritoneum and to the diaphragm. Several coils of small intestine firmly united to posterior wall of abscess on right near the cæcum. Water forced through small intestine *in situ* entered abscess. On further examination after removal of parts, a small, well-defined perforation was found on the wall of the small intestine, about two feet above the ileo-cæcal valve, opening directly into abscess. This portion of intestine intimately adherent to abscess wall. All the contents of pelvis much matted together. Right ovary of normal size, but contained several masses of caseous tubercle. Left ovary not made out; left tube dilated; walls thickened; embedded in a mass of adhesions to surrounding parts; contents, straw-coloured fluid. Mucous membrane of rectum thickened and congested. Bladder: mucous membrane congested, hæmorrhages here and there; some hypertrophy. Cavity of uterus normal.

All the mesenteric and abdominal glands diseased, most of them calcareous. Cæcal glands formed a mass size of walnut, in right iliac region. Intestines normal; no disease of intestinal glands. Liver very large, in advanced stage of fatty degeneration. Spleen a little enlarged, otherwise normal. Kidneys soft, cortex swollen and ill defined (cloudy swelling); in cortex of right kidney two small caseous masses.

Heart normal.

Lungs: In upper part of right lower lobe, near the posterior border, two caseous masses; connective tissue thickened; much emphysema in neighbourhood. A few miliary tubercles scattered through right lower lobe. Glands, at root of right lung, calcareous. Only one grey tubercle actually made out in left lung. Both lungs generally emphysematous. No cavity (W. B. Hadden).

Case 6. *Pedunculated suppurating retro-peritoneal cyst, projecting from behind uterus and forming an abdominal tumour; abdominal section; removal of tumour; death on eighth day; autopsy; small quantity of pus in pelvis; partial obstruction of small intestine at site of old adhesion* (from notes by G. E.

Anson).—S. T—, æt. 32, single, a dressmaker, admitted December 13th, died December 27th, 1888. Five years ago, when overworked as a teacher, caught cold (not during a menstrual period), and had a severe illness with much abdominal pain, incapacitating her for six months. Since residing in London has felt well until autumn of 1887, when she had a similar attack; a third took place three months ago. Is now sometimes in severe pain, sometimes the pain is slight. Menstruation has been regular and painless throughout. Patient is thin, sallow, ill and tired looking, of highly nervous temperament, and unusual intelligence. She complains of some feeling of fulness at lower part of abdomen; is not aware of any tumour.

Abdomen made very slightly prominent by a rounded, fluctuating tumour, situated almost centrally and reaching from pubes to umbilicus (six and a half inches). It extends three inches to right and two and a half inches to left of middle line; dull on percussion. Uterus normal in size and consistence; pushed to left side; sound passes with difficulty, after being slightly curved. Urine loaded with lithates; free from albumen and sugar.

December 20th.—Median incision two and a half inches, afterwards enlarged to four inches. Omentum adherent to cyst; separated and pushed up. Some recent adhesions to anterior abdominal wall, especially on right. After these had been separated, cyst, which was covered with peritoneum, was tapped. Thirty fluid ounces of dark-brown fluid (proving, on microscopical examination, to consist of altered blood), with some thick, grumous, flaky material, and, towards the end, some thick pus, were removed. The cyst wall was very friable and gave way in all directions on the slightest manipulation. The remaining adhesions were then separated; they were very numerous, firm and vascular, and involved intestine, mesentery and posterior parietal peritoneum. Two vascular, adherent processes of peritoneum were ligatured. The pedicle, which could not be brought into view, was secured with a single thick ligature and divided. The cyst consisted of one main and two daughter cysts. These last had both been in a state of suppuration and had burst during the operation into the main cyst. The right Fallopian tube was not seen. The

uterus, with the left ovary and tube, were matted densely together by old adhesions; Douglas's pouch was obliterated by adhesions. Peritoneum was irrigated with hot boracic solution; a glass drainage-tube was inserted, passing down to the right, and the wound brought together.

At 9.30 the following day there had been no sickness. The drainage-tube was removed. Has, since operation, coughed up a good deal of purulent mucus, very tenacious and difficult to eject.

On the third day (December 22nd) patient became very restless; no pain; pulse rapid, flickering, and uncountable.

December 23rd.—Condition very alarming; extremities cold, bowels moved unconsciously, respiration embarrassed, no pain or sickness, slight distension. Towards evening, patient appeared to be moribund.

At 4 a.m. on the 24th was apparently dying, when, suddenly, she sat up and asked to have the pillow changed. During that day remained a trifle better, but very nervous and irritable. Bowels relaxed, motions passed unconsciously. Threatening bedsore.

Continued in much the same state, quite conscious up to 4 a.m. on the 27th, when she lost consciousness and died at 8 a.m.

Temperature Record.

1888.				1888.			
Dec. 13	...	p.m.	100·8°	Dec. 21	4 p.m.	...	100·6°
14	...	a.m.	99·4	21	8 p.m.	...	100·0
14	...	p.m.	101·0	22	4 a.m.	...	99·6
15	...	a.m.	98·6	22	8 a.m.	...	98·8
15	...	p.m.	101·0	22	Noon	...	99·8
16	...	a.m.	100·4	22	4 p.m.	...	98·8
16	...	p.m.	100·8	22	8 p.m.	...	98·4
17	...	a.m.	99·0	22	Midnight	...	99·2
17	...	p.m.	100·0	23	4 a.m.	...	100·2
18	...	a.m.	100·6	23	8 a.m.	...	100·0
18	...	p.m.	100·8	23	Noon	...	100·4
19	...	a.m.	100·4	23	4 p.m.	...	98·8
19	...	p.m.	100·0	23	8 p.m.	...	100·0
20	...	Operation, 2 p.m.		24	4 a.m.	...	97·8
20	...	8 p.m.	99·0	24	8 a.m.	...	98·4
20	...	Midnight	100·2	24	Noon	...	99·0
21	...	4 a.m.	99·8	24	4 p.m.	...	98·2
21	...	8 a.m.	99·8	24	8 p.m.	...	98·0
21	...	Noon	100·2	24	Midnight	...	97·6

1888.			1888.		
Dec. 25	4 a.m.	97·0°	Dec. 26	4 a.m.	96·4°
25	8 a.m.	96·6	26	8 a.m.	96·4
25	Noon	97·6	26	Noon	96·8
25	4 p.m.	97·4	26	4 p.m.	99·2
25	8 p.m.	96·8	26	8 p.m.	98·2
25	Midnight	96·0			

Post-mortem.—Sutured wound three and a half inches long in middle line; upper two thirds firmly united; lower third, with track of drainage-tube, covered with scab, ununited. Omentum firmly adherent to under surface of wound its whole length, a small collection of pus under its lower end. Lower end of omentum, dipped through coils of small intestine, was firmly attached by an old adhesion to the back of the pelvis, by side of rectum and transverse colon, which latter, empty and collapsed, was drawn out of position by the omentum. Superficial coils of small intestine much distended with gas; some injection of vessels along lines of contact, but only a few shreds of lymph. A little blood-stained fluid free in lateral parts of peritoneal cavity. So far, many of the coils of intestine that had come into view had a normal appearance, but the coils that lay in the pelvis were acutely inflamed and adherent to each other by soft, recent, blood-stained lymph, the signs of inflammation most intense at bottom of pelvis. Between the coils adherent to left foramen ovale was a collection of about half a fluid drachm of viscid green pus. On removing the intestines, the floor of the pelvis seemed levelled by adhesions and deposit of inflammatory material, there being no sign visible of bladder, uterus, ovaries, or broad ligaments. On this floor lay two or three fluid ounces of very viscid, greenish, non-offensive pus. The uterus and adnexa were scooped out. The left ovary and tube, the former scarred and contracted, were adherent on all sides, and lay behind and to left of uterus. The right ovary and tube were also found amidst a mass of adhesions. The remains of the pedicle, with ligature attached, were found projecting from the peritoneum, covering the lower part of the corpus uteri. The tumour removed was evidently a cyst of the peritoneum or underlying it. There had been no secondary hæmorrhage. Where a coil of small intestine crossed the right side of brim

of pelvis it was firmly attached by old adhesions to psoas, so that partial obstruction resulted. Meckel's diverticulum and vermiform appendix normal.

Left pleura completely and firmly adherent, so that a knife had to be used, the lung being torn on removal. Right pleura adherent over apex. No fluid in pleuræ. A few caseous or partially calcified nodules at apex of left lung, largest smaller than a pea. Some hypostatic basal congestion. Texture of rest of lung abnormally firm but not incapacitated. Anterior surface and edge of right lung extremely emphysematous; caseous nodules at apex, rest healthy. Pericardium almost entirely obscured by emphysematous edge of right lung. Normal, no fluid. Heart and other organs normal (H. P. Hawkins).

Vesico-Vaginal Fistula.

(From notes by J. D. Ballance and J. T. Clarke.)

In the single case of vesico-vaginal fistula that presented itself, I had, for the first time, an opportunity, exceedingly rare in hospital practice, of watching the fistula in process of formation.

M. B—, æt. 35, married, admitted 5 a.m. May 9th, 1888, in labour, breech presenting and impacted. Had been in labour since May 3rd. Vulva, vagina, and rectum swollen and œdematous, os fully dilated. After fruitless attempt by the resident accoucheur to deliver by means of forceps, obstetric physician sent for, and delivery accomplished by bringing down one foot, and then, child being dead, crushing of the after-coming head with cephalotribe. Patient collapsed and pulseless, rallied after ether subcutaneously. Urine highly albuminous. On eleventh day large slough, seen through Sims's speculum, on anterior vaginal wall. This day, for first time, lost control over bladder; catheter passed and retained. On sixteenth day greater part of slough separated, surface granulating. A day or two later the urine passed involuntarily, and on June 4th catheter removed.

June 15th.—Fistula near cervix having been clearly made out, patient sent home, to be admitted for operation later on,

when albumen, still considerable, shall have diminished or disappeared.

Readmitted August 21st; discharged, September 8th, 1888. Patient much improved in general health, no albumen in urine. Operation August 23rd. Fistula small, high up in front of cervix, hidden by vaginal cicatricial folds, and difficult to expose. Edges denuded and brought together by four silver-wire sutures. Milk injected *per urethram;* slight leakage, two additional sutures. Ends of wires left long, hanging from vulva. Catheter every two hours and, from seventh day, every four hours. No leakage after operation. Sutures removed thirteenth day, wound quite united. Catheter until fifteenth day, when allowed to be up and to pass urine herself. Temperature never exceeded normal. No leakage up to day of discharge, or afterwards.

Pelvic Hæmatocele.

Case 1. *Large soft retro-uterine swelling depressing posterior vaginal fornix, pushing uterus upwards and forwards, extending upwards midway towards umbilicus, and interfering with functions of rectum and bladder; history of attack of vomiting and sudden pelvic discomfort three days before last period; mistaken at first for retroversion of gravid uterus; rest; gradual subsidence of tumour* (from notes by H. H. Hulbert).—F. A—, æt. 25, married, admitted April 12th, discharged June 2nd, 1888. Catamenia began at fifteen, regular and normal. Has had no serious illness. Three children; no miscarriages; last confinement September 6th, 1887. First menstruation after confinement February 24th, second April 3rd. On March 30th, after unusually heavy work and much domestic anxiety, experienced a feeling of weight and bearing-down pain in the pelvis, and had an attack of vomiting. On admission, complained of pain above pubes and before defæcation; also some pain and difficulty in micturition. Large soft mass felt, on vaginal examination, filling up cavity of sacrum and depressing posterior vaginal fornix to within one and a half inches from vaginal orifice. Uterus displaced upwards and forwards, cervix high up behind upper part of symphysis pubis, corpus felt beneath abdominal wall; fundus three inches above pubes. The con-

dition being at first mistaken for retroversion of gravid uterus, an attempt was made to push up the retro-uterine tumour while traction was made on the cervix by means of the volsella. This was followed by a good deal of pain and a rise of temperature to 102·6° as compared with 99·8° the previous evening. The following day, however, all pain ceased and the temperature fell to 100° in the morning, and 99·8° in the evening. The bowels acted naturally and painlessly, and micturition was no longer difficult. On April 17th the uterine sound showed the length of the uterine cavity to be three inches; fundus one and a quarter inches above symphysis. Temp. 98·6° in morning, 99·2° in evening.

April 21st.—Patient feels perfectly well; no pain since evening of 13th. Temperature from this time normal.

May 4th.—Swelling much diminished; upper limit can now be distinctly made out half way between umbilicus and pubes, and above level of fundus uteri, which lies in front of tumour.

25th.—Swelling now so far diminished that its upper limit is below that of fundus uteri.

Case 2. *Large, tense, elastic swelling, bulging downwards between uterus and rectum, extending upwards to within one and a quarter inches of umbilicus, and pushing uterus upwards and forwards; continuous external hæmorrhage; anæmia; history of sudden pain in pelvis after exertion, with hæmorrhage and vomiting; rest; disappearance of swelling* (from notes by R. Ackerley).—A. L. M—, æt. 26, married, admitted May 19th, discharged July 21st, 1888. Catamenia began at thirteen, normal and regular. Three children; no miscarriages. Last child fifteen months ago. Three weeks before admission, and a fortnight after her last menstrual period, while doing some heavy work, patient was suddenly seized with a severe pain in the lower part of the abdomen. The same night she noticed some hæmorrhage from the vagina. She rested for two days, but did not remain in bed. The pain, however, then became more severe, and vomiting came on with faintness. She now remained in bed for three days. On leaving her bed she found herself unable to do any work, on account of pain, faintness, and hæmorrhage. The day before her admission she again vomited twice.

On admission, patient was markedly anæmic; temp. 99·6°. Uterus, of normal size, pushed upwards and forwards by a large swelling, tense, rounded and somewhat elastic, filling up the hollow of the sacrum, and extending upwards above the level of the fundus uteri to a line one and a quarter inches below the umbilicus. The day after admission the temperature became normal and remained so.

May 18th.—The swelling is beginning to diminish. There is still some pain in lower part of abdomen and slight hæmorrhage.

25th.—The patient feels better, and colour is improved. Upper limit of swelling now only reaches a quarter of an inch above level of fundus.

28th.—Two clots of blood escaped with the vaginal discharge.

June 2nd.—Pain very severe; hæmorrhage continues.

12th.—Swelling much smaller; uterus freely movable.

July 3rd.—Patient has been getting up since 24th ult. without ill effects. Discharge partly dark red and partly green. Examined three months after her discharge, swelling had entirely disappeared; one or two little firm irregular masses, the size of a bean, felt on posterior surface of uterus.

Case 3. *Soft, fluctuating, retro-uterine swelling; irregular hæmorrhage; anæmia; history of sudden hæmorrhage a week after menstrual period, followed by pelvic pain and dysuria; rest; gradual diminution of swelling* (from notes by J. T. Clarke).—E. L—, æt. 38, married, admitted July 27th, discharged August 29th, 1888. Catamenia commenced at fifteen, married at twenty-four. Three children, four miscarriages; last child four years ago; last miscarriage nine months ago. Subject to winter cough, otherwise in good health. Illness commenced eight weeks ago, one week after a normal period. Awoke in the night with an attack of uterine hæmorrhage which lasted about a quarter of an hour; felt faint and shivered. A few days later pain came on in the lower part of the abdomen and there was pain during micturition. She lay in bed for a fortnight. On beginning to move about had bearing-down pain. Has been losing blood from time to time up to her admission. On examination, there is found a soft fluctua-

ting swelling behind the uterus in Douglas's pouch; movement of the uterus has no effect upon the swelling. Patient anæmic.

August 2nd.—No pain; appetite good; temperature normal; hæmorrhage continues.

3rd and 4th.—No hæmorrhage. Recommenced on the 5th and ceased again on the 11th, the loss being in all respects such as would occur at a normal menstrual period.

17th.—No hæmorrhage since. Swelling smaller and harder and not so low down in posterior fornix. Patient feels better and stronger, though the feet and legs swell after standing or walking.

Case 4. *Firm retro-uterine swelling, depressing posterior fornix, rising into abdomen to within two and a half inches of umbilicus, and displacing uterus forwards and upwards; history of retention of urine three weeks before admission; rest; rapid diminution of swelling; mental depression with delusions during convalescence* (from notes by A. N. Boycott).—M. S—, æt. 33, married, admitted August 25th, discharged October 7th, 1888. Married at sixteen, seven children and one miscarriage five years ago. Last child twenty-one months ago, still suckling. Three months ago had great pain during a period, felt faint and had to go to bed for a day. She thought she had miscarried, though there was no unusual loss except a few clots. There have since been two normal periods. Three weeks ago she had to call in a doctor on account of retention of urine.

On admission, patient looks weak and ill, not specially anæmic; she complains of pain in the lower part of the abdomen; temp. 100·6°. On examination, there is a hard irregular swelling in lower part of the abdomen. Bimanually, the cervix uteri is felt pushed upwards and forwards, being on a level with the top of the symphysis pubis; the corpus uteri is normal in size and is lying immediately beneath the abdominal wall; fundus four and a half inches below umbilicus. Uterus can be moved slightly between the two hands. There is a rounded, hard, firm swelling in Douglas's pouch, pushing the uterus forwards and depressing the posterior fornix; this mass is continuous with a swelling that

rises into the abdomen behind the uterus and to a distance of two inches above the level of the fundus. The mass is immoveable and is uninfluenced by movement of the uterus. Measured at its highest limit, it is six inches in width, extending equally towards each side of the middle line; a well-defined edge can be felt along its upper and anterior border, and a small moveable lump can be detected on the left side in front of it. On the day following admission the morning temperature was 102·6°, the evening temperature 103·8°.

On August 27th the temperature had fallen to 100·0° in the morning and 100·4° in the evening.

On the 28th the morning temperature was 99·2°, evening 99·6°. From that day the temperature was normal.

On September 8th the tumour had greatly diminished; its transverse measurement is now four and a half inches, and its upper boundary is less distinct. From this time the size of the swelling rapidly decreased. The patient, though eating well and quite free from pain, became depressed and subject to fits of crying, declaring that she was going to be locked up, that she was going to be hanged, that she was a very wicked person, and was not really married. The mental disturbance had not altogether subsided when patient went out.

Retroversion of Gravid Uterus with Retention of Urine.

Case 1 (from notes by R. Ackerley).—B. B—, æt. 40, married, admitted June 6th, discharged June 16th, 1888. Married twelve years, six children, one miscarriage (six years ago). Last child one year ago; menstruation recommenced six months after delivery and recurred regularly until three months ago. Patient believes herself to be three months pregnant. Six weeks ago, after lifting a heavy box, patient began to have difficulty in passing urine. This continued, and one morning, three weeks ago, she found herself unable to empty the bladder. She was in great pain until evening, when she was able to pass water without assistance. From that time she has been in pain more or less continuously and has passed only a small quantity of urine at a time; it has

frequently passed involuntarily. The bowels have been constipated, and the bearing-down pain has been most severe when the bowels have been about to act.

On admission, there is a large, rounded, fluctuating swelling occupying the central part of the abdomen from umbilicus to pubes, dull on percussion. No fœtal heart-sounds or uterine souffle. On vaginal examination, the rectum is felt full of hard fæces. The vaginal roof is depressed by a firm, obscurely fluctuating swelling filling up the hollow of the sacrum. The os uteri can only be reached with difficulty, being drawn forwards and upwards above the symphysis pubis. The anterior vaginal wall is much swollen. There is dribbling of urine. The bowels having been emptied by an enema, a catheter was passed with considerable difficulty and four pints eight fluid ounces were drawn off. The anterior lip of the cervix was then seized with a volsella, and slight traction made, while with the fingers of the other hand the body of the uterus was pushed upwards *per vaginam*. After it had yielded a little, the volsella was removed, and the replacement completed by combined pressure downwards on the cervix and upwards on the corpus uteri. Four hours afterwards the patient passed a pint of urine naturally. From June 8th to 12th there was a blood-stained watery discharge from the vagina, accompanied with pain of an intermittent character. A grain of opium was given every six hours. There was no difficulty in micturition and the uterus retained its normal position. After June 12th there was no pain and only once a little blood-stained discharge. Temperature on admisssion, and for first forty-eight hours, 99° to 99·2°; afterwards normal.

Case 2 (from notes by R. Ackerley).—C. A—, æt. 18, admitted June 17th, discharged June 23rd, 1888. Married five months ago, has not menstruated for three months, regards herself as pregnant. About 11 p.m. the night before admission patient found herself unable to pass water, owing, as she believes, to having strained herself in lifting a perambulator. She was in great pain all night and had not yet been able to pass water when she came to the hospital. On admission at 7 a.m. the urine was dribbling away; the abdomen was distended by a tense, centrally situated fluctuating swelling reach-

ing from umbilicus to pubes, and resembling in its shape a pregnant uterus of the seventh month. The tumour was dull on percussion. No uterine souffle or fœtal heart-sounds audible. There was a slight blood-stained vaginal discharge. The os uteri, soft and patulous, was pressed forwards against the pubic arch, where it lay immediately behind the meatus urinarius. The cavity of the sacrum was filled by a soft globular tumour, depressing the vaginal roof and easily felt *per rectum*. This was evidently the pregnant uterus retroverted and slightly retroflexed.

Seventy-five fluid ounces of clear urine were drawn off by catheter, whereupon the abdominal swelling disappeared. The body of the uterus was now found to be movable. It was therefore pushed upwards and forwards by means of two fingers in the rectum, while backward pressure was made upon the cervix with the fingers of the other hand. After reduction by these means, the uterus occupied its normal position and all pain disappeared. Three hours later the patient passed urine voluntarily. She remained in for six days and went out, at the end of that time, feeling perfectly well.

Case 3 (from notes by A. N. Boycott).—L. Q—, æt. 28, married, admitted July 3rd, discharged July 10th, 1888. Has had five children; last period three and a half months ago. Had to come into hospital for the same trouble for which she is now admitted during her first pregnancy, nine years ago, and again during her third pregnancy, four and a half years ago. Her present symptoms commenced seven days ago, when she could not pass urine; for two days it was constantly dribbling. A catheter was then passed in the casualty department of the hospital. In two days the pain and incontinence had returned, when she applied at the hospital a second time. The catheter was again passed. Three days after this she was admitted.

On admission, pain in lower part of abdomen, with a tense fluctuating swelling reaching from pubes to two and a half inches above the umbilicus, dull on percussion and acutely tender to the touch. The urine is dribbling from the urethra constantly. The feet and legs are œdematous. The os and

cervix uteri are displaced forwards, the os being on a level with the top of the symphysis pubis. The body of the uterus occupies the hollow of the sacrum, interfering, by its pressure on the rectum, with the passage of the fæces. Eighty-five fluid ounces of urine were drawn off by catheter and the uterus was replaced by means of two fingers in the rectum aided by pressure in front of the cervix. On July 4th the patient passed water naturally; on the two following days there was some return of the dribbling; after which the condition was perfectly normal. The temperature throughout was unaffected.

Case 4 (from notes by A. N. Boycott).—B. C—, æt. 35, married, admitted August 14th, discharged August 22nd, 1888. Married twelve years; had, first, four miscarriages at the sixth month, and afterwards four children at full term. Never any difficulty in passing water during previous pregnancies. Last menstruated three months ago. Has had difficulty and pain in micturition for a fortnight. Five days ago found herself unable to pass any water; the next day she noticed herself to be much swollen and to be passing only a very small quantity of urine. This continued to be the case up to her admission. There has been no constant dribbling.

On admission patient looked pale and anxious as if in great suffering. There is a fluctuating abdominal tumour, dull on percussion and extending from the pubes to a little above the umbilicus. The os and cervix are situated high up behind the symphysis pubis, the os being large, transverse, and patulous and directed forwards. The uterine axis is directed straight backwards, the enlarged body of the uterus filling up the hollow of the sacrum. Eighty fluid ounces of clear urine were withdrawn by the catheter. The uterus was then reduced, while the patient was in the lithotomy position, by means of pressure upwards and forwards on the uterine body, with the four fingers of the left hand introduced *per vaginam* the other hand making backward pressure externally on the cervix, just above the symphysis pubis, and, later, on the cervix itself by means of one or two fingers passed within the vagina. After reduction, a Hodge's pessary was introduced.

For a week the patient was unable to empty the bladder; after that, the catheter was no longer needed.

The temperature was unaffected throughout.

Puerperal Eclampsia.

Case 1. *Fatal* (from notes by J. D. Ballance; post-mortem by Dr. Hadden).—E. C—, æt. 29, married, admitted 7.40 p.m. May 4th, died May 6th, 1888. Has had three children; no miscarriages; confinement expected in seven weeks.

On morning of May 3rd found by her friends on the floor of her room, unconscious and in a convulsion. The obstetric clerk saw her about noon and sent for the resident accoucheur, who found her lying on her back, unconscious, with contracted pupils, stertorous breathing, rapid pulse and inability to swallow. Œdema of ankles and upper extremities; none noticeable in the face or eyelids. The patient remained in this state for two hours, during which time she had several convulsive attacks. The face was contracted, hands clenched, and the whole body convulsed; respiration so embarrassed that the face became deep purple. An ounce of urine, drawn off by catheter, was found loaded with urates, and on boiling became almost solid with albumen.

Dr. Cullingworth visited the patient at 3.15 p.m. and directed that labour should be at once induced. The membranes were thereupon ruptured, the os uteri being closed. Dilatation proceeded slowly, but attempts to hasten it artificially, as by the hydrostatic bag, aggravated the symptoms, and had to be abandoned. The child was born dead at 9 p.m., the placenta being expelled naturally. During the night the patient had twelve or thirteen fits, and in the intervals remained in a comatose state.

At 3 p.m. on the 4th, two minims of croton oil administered, but with little effect. After soap-and-water enemata the bowels acted. At 7.15, the patient was brought to the hospital and placed in the small ward. At 11 p.m., dry cupping ordered to loins, and a two-ounce nutrient enema every six hours.

May 5th, 12.45 a.m.—Œdema, first noticed in the eyelids

last evening, is increasing and is now marked in the chest and thighs. Two drops of croton oil repeated and one sixth of a grain pilocarpin administered subcutaneously. Pulse 120, temp. 101·6°. Nutrient enema not retained. 5 a.m., there have been forty-four fits since 10 p.m. Œdema increasing. Skin acting well. 11 a.m., respiration rapid and shallow, pulse 140, temperature (at 8 a.m.) 102·2° Mucous râles and rhonchi. No increase of dulness over cardiac area. Sick once or twice during night; not since. Patient swallows but very slowly. Pilocarpin, one third of a grain subcutaneously. A quarter of an hour later the skin acted profusely. Turpentine stupes were ordered over chest, to be followed by hot fomentations. 12 noon, coma continues; no more convulsive attacks. Up to 8 p.m. on the 5th thirty-two fluid ounces urine had been drawn off since admission (twenty-four hours). Pilocarpin, one sixth of a grain, administered at 6.40 p.m., did not act so profusely. At 9 p.m. temperature had risen to 104°; pulse 160, very weak and compressible. Respiration very rapid and shallow; a wet-pack was given, and twenty minims ether injected subcutaneously. Wet-pack continued for three hours, temperature then 105·2°, pulse 180, respiration 60.

May 6th.—Patient became weaker during the night; temperature continued to rise. At 9 a.m. it was 107·4°. Death took place at 9.5 a.m. The urine last drawn off was loaded with urates, had a sp. gr. 1032, and showed a thick precipitate of albumen on boiling, though less solid than the previous day.

Post-mortem (Dr. Hadden).—Body fat; slight œdema of lower limbs. Breasts large, containing thin milk. Pleuræ natural. Pericardial sac contained a slight excess of fluid. Heart dilated, flabby, substance pale and soft, valves healthy. Lungs deeply congested and friable in the dependent parts; numerous early red patches of broncho-pneumonia scattered through both lungs. Bronchi contained a little blood-stained watery secretion. Pulmonary vessels natural. Liver rather large; lobules swollen and greasy looking, not much paler than natural. Gall-bladder normal. Spleen natural, not enlarged. Uterus seven inches from fundus to os externum. On section, the mucous membrane at placental site, on posterior wall, rough and blood-stained. Os very patulous, inner surface slate coloured and sloughy in appearance. Right ovary con-

tained a corpus luteum, with a pale yellow boundary; within this was a dull white material with a radiating structure; no central cavity seen. Bladder contained a drachm or two of turbid urine. Ureters not dilated. Kidneys of about normal size; weight of the two, ten and three quarter ounces. Capsule stripped readily and was not thickened; cortex not much increased, but very pale, opaque, and obscure; some patches of yellow mottling here and there, evidently areas of fatty change. Both organs were clearly the seat of tubular nephritis. Pelvis and calyces not dilated. Renal veins contained a fair amount of fluid blood; no clot. The inferior vena cava and iliac veins were natural and contained fluid blood only. No evidence of unusual congestion in the venous system within the abdomen. Stomach decomposed. Brain natural; no evident change or vascularity.

Case 2. *Non-fatal* (from notes by G. E. Anson).—M. S—, æt. 27, married, admitted November 5th, discharged November 24th, 1888. Has had three children and one miscarriage (at third month), the latter a year ago and attended with much hæmorrhage. For some days previous to admission had complained of lassitude and headache. On the morning of admission patient, being about seven months pregnant, was as usual when her husband went to his work. At noon a neighbour visited her and made her some tea; she complained of not being able to see. During the afternoon and evening she had several fits. At 5 p.m. she was unconscious. Just before leaving home for the hospital she passed a large quantity of urine in bed, having passed none for twenty-four hours previously. On admission cheeks flushed, conjunctivæ sensitive, pupils dilated. Pulse soft, 100; temp. 100°. Patient restless and unconscious. Respiration noisy. She vomited a compound jalap powder and also two minims of croton oil placed on the tongue; one sixth of a grain pilocarpine was injected subcutaneously.

At midnight, vaginal examination under chloroform. Os uteri size of a shilling. The membranes were punctured; two or three fluid ounces liq. amnii escaped. Vertex presenting; head in third position. An ounce of urine was drawn from the bladder; on boiling, an almost solid precipi-

tate was formed. At 1.30 a.m. another convulsion occurred (the second since her admission). During the paroxysm the child was born, and about five minutes later the placenta was expelled spontaneously. The child was living and fairly well nourished but small.

November 6th.—Patient unconscious all the day, incapable of being roused. Six fits occurred after delivery; four before 5 a.m., one at 8.30 a.m., and the last at noon; their severity gradually diminished, the last being very slight. Soon after 12 o'clock, the patient being anæsthetised, thirty grains each of chloral hydrate and potassium bromide were administered *per rectum;* at the same time, four fluid ounces of urine were withdrawn by catheter. The urine was at first clear; but on cooling deposited urates in abundance; sp. gr. 1032, acid in reaction; highly albuminous and shown, on microscopical examination, to contain some blood-corpuscles and epithelial casts. After the rectal medication, the bowels acted freely twice, the motions being passed unconsciously. Up to 2 p.m. the temperature varied between 100° and 101·6°; from that time it diminished, until at 10 p.m. it was subnormal (97·8°). Feet and ankles œdematous. At midnight there were signs of returning consciousness; the patient answered questions but was irritable and sleepy.

7th.—Quite conscious, but imagines that she is at home, that the child is not hers but her mother's, and has no business to be in her room; she is firmly convinced that the resident accoucheur is her husband. At 1 p.m. passed twenty-six fluid ounces of urine, containing much less albumen (about one fourth) and less loaded with urates. Œdema of legs has disappeared. Tongue less furred. Temperature subnormal (96·6° to 97·6°).

8th.—Admits that the child is her own and has begun to notice and suckle it. Does not remember anything about having been taken ill, or even that she has been pregnant. A mere trace only of albumen in the urine; sp. gr. 1020; no deposit on cooling. The diet consists entirely of milk and beef-tea. Temperature same as on previous day.

9th.—Bowels acted twice after a dose of house-mixture, good supply of milk in breasts. Fifty-two ounces of urine in twenty-four hours, passed voluntarily; slight trace of albumen.

11th.—Ninety fluid ounces of urine.

12th.—Fifty fluid ounces of urine. Fish diet.

14th.—Forty-seven fluid ounces of urine; some headache and sleeplessness; slight œdema of both legs.

16th.—Still some headache; trace of albumen in urine.

20th.—Was up for three hours yesterday. Urine sp. gr. 1010, trace of albumen.

21st.—Urine sp. gr. 1005; no albumen.

23rd.—Complains of headache, deafness, and weak sight. Cannot remember appearance or number of house. Can only call to mind one of her two children at home.

24th.—Discharged cured.

Retention of Menstrual Coagula (Hæmatometra).

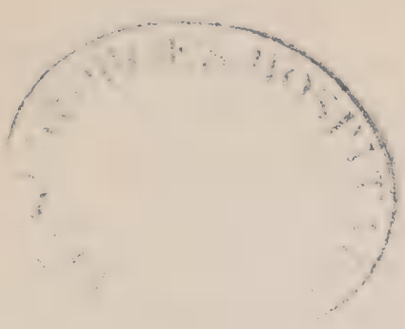
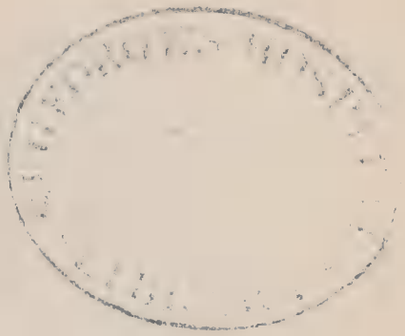
(From notes by R. Ackerley.)

S. B—, æt. 22, admitted April 26th, discharged May 9th, 1888. Menstruation commenced at fourteen, regular up to October, 1887, when catamenia appeared as usual. Since then, *i.e.* during last six months, no menstrual discharge and no molimen. Married two months ago. Awoke on morning of April 14th with severe pain in hypogastrium of a bearing-down character, and hæmorrhage from the vagina, which continued up to the time of admission. For a fortnight previous to this attack had been sick every day, not specially in the morning. Since the attack the bowels have been confined, micturition has been frequent, and the patient has been obliged to lie down for the greater part of the day. On examination, a solid, firm, rounded mass was felt distending the cervix uteri and projecting slightly into the vagina. The patient being placed on her back, the fundus uteri was pushed downwards and held steady by one hand, while, with the fingers of the other hand, the mass was scooped away in two portions. It measured $1\frac{3}{4}$ inch × $1\frac{1}{4}$ inch, and consisted of a solid, reddish-brown mass of blood-clot of uniform consistence and covered with a thin membrane.

On microscopic examination, the membrane was found not to possess the characters of the membrana decidua. There was a slight blood-stained discharge for a day or two. The temperature was 99·6° for the first twenty-four hours and then

remained normal and the patient went out, apparently quite well, on the 5th May. Whilst walking out in the evening she was seized with severe pain of an intermittent character in the lower part of the abdomen. The pain recurred at intervals through the night; in the morning, a large clot passed *per vaginam*. At 10 p.m. that day (May 6th), she was readmitted with retention of urine. On May 8th she was able to pass urine voluntarily and the following day she left the hospital well.

Note to Case 1, *on page* 72.—This case was believed at the operation to be an abscess in the connective tissue of the left broad ligament. The presence of mucus, however, in the discharge, and the utter failure of all attempts to bring about closure of the sinus, convinced me that the abscess-cavity, if not the sinus itself, was lined with mucous membrane, and was in all probability the left Fallopian tube. Accordingly, on January 14th, 1890 (one year and nine months after the operation), I dissected out the sinus, and found it to consist of the left tube, thickened but no longer distended. It was ligatured close to the uterus and removed, the stump being cauterised.

THE MEDICO-LEGAL DETECTION OF HUMAN BLOOD.

A Paper read before the Metropolitan Police Surgeons' Association at St. Thomas's Hospital, March 13th, 1889.[1]

By S. MONCKTON COPEMAN, M.A., M.B.Cantab.

It is often a matter of the highest importance in criminal trials, not only for the prosecution, but in the interests of the prisoner also, to determine, if possible, whether certain stains found on clothing or elsewhere are due to blood or not, and further, if due to blood, whether to human blood or to that of one of the lower animals. The first of these two propositions is, under certain conditions and in the hands of competent persons, comparatively easy of answer, but the second has, up to the present, completely baffled the powers even of experts in forensic medicine, although, as will be shown, numerous attempts have been made, both here and in other countries, to find a solution of the difficulty.

Among the laity, at any rate, it appears to be the general opinion that it is an easy matter to say with certainty not only that stains are due to blood, but also to say whether they con-

[1] Towards the expenses of this research a grant was made by the British Medical Association, on the recommendation of the Scientific Grants Committee of the Association.

sist of human blood or not, yet it is well known to scientists that such is by no means the case, even when the observer has had a thorough training in physiological methods; and accordingly, with the hope of throwing a little light on what is confessedly an obscure point, I propose on the present occasion to show how far it is possible to give an answer to the questions,

(1) Is blood present? and if so,

(2) Is it human blood?

Considering the matter then in its natural sequence, we are first confronted with the question as to whether certain suspected spots or stains on articles of clothing, furniture, or weapons are due to the presence of blood or not, and to this we ought usually to be able to give a decided answer, even in such difficult cases as those in which the stain is of old standing, is on a dark-coloured material or a rusty weapon, or has been partially removed by washing.

At the outset it should be remembered that we possess no chemical test for blood as such, and consequently when the corpuscles cannot be identified by the microscope, its presence is established by obtaining the reactions given by its colouring matter, hæmoglobin.

The tests usually employed may be summed up under the following heads:

1. *Chemical*, including the Hæmin test.
2. *Spectroscopic.*
3. *Microscopic.*

These various methods are so fully described in all the standard text-books, that although it will be necessary to say a few words about each, I do not propose to discuss them at any length, except in those instances where I may be able to add something to the existing knowledge on the subject. Although *Inspection* can perhaps hardly be said to come under the heading of tests, it cannot be too strongly urged how necessary it is to note accurately the colour, position, and possibly direction of a stain, since thus some information may be acquired as to its amount, age, and origin.

1. *Chemical tests.*—The chemical properties of the red colouring matter of blood are briefly as follows:

a. It readily dissolves in cold distilled water if the stain be recent, forming a red or reddish-brown solution. If the stain

be old it may be advisable to add a small quantity of ammonia to the water; the stain will then dissolve, and if necessary the ammonia can be got rid of afterwards by the application of gentle heat.

b. In presence of such a weak solution of ammonia the colour is unaltered, while it may change to a crimson, blue, or green if the stain be due to some substance other than blood.

c. If the red solution be heated to a temperature of 70° C., the red colour is destroyed, while a flocculent precipitate of brownish colour is formed, showing the presence of serum-albumen in the fluid; the colour of the precipitate being due to the altered blood pigment being carried down with it.

d. The Guaiacum test.—The addition of a few drops of a freshly prepared tincture of guaiacum to a solution containing the colouring matter of blood causes a reddish-white precipitate of the resin, which is turned of a deep blue colour on the subsequent addition of peroxide of hydrogen, ozonic ether, or oil of turpentine. This test, which by itself is not to be depended on, as it is given with other substances such as milk, pus, and urine, as well as blood, is nevertheless extremely delicate, and in conjunction with other tests is very valuable, especially as it is so readily applied. A good way is to place two or three drops of the solution to be tested on a piece of blotting paper by means of a glass rod, and then to add a drop, first of tincture of guaiacum, and then of turpentine, when the blue colour will appear at the point at which the three points overlap each other. If, as is sometimes the case, a blue colour develops on the addition of the tincture of guaiacum alone, the test is comparatively useless, and other methods must be relied on. In practice most of the other substances which answer to the guaiacum test can be eliminated, as they do not possess the red colour of blood, although it is conceivable that sweat, for instance, might cause a stain on a shirt, over which a red scarf was worn, which might be mistaken for blood if this test alone were used.

e. The Hæmin test.—Crystals of hæmin, or as they are sometimes called, Teichmann's crystals, are readily obtained from blood, even in very minute quantities, and consequently their discovery gives a very delicate test for its presence.

They may be procured from a piece of blood-stained tissue of extremely small dimensions (less than an eighth of an inch in diameter) by a slight modification of the plan usually adopted; which is as follows: Place the bit of rag or other material in a watch-glass with a drop or two of glacial acetic acid, and warm slightly over a Bunsen flame or spirit-lamp, in order to dissolve out the colouring material, aiding matters if necessary by gentle kneading with a glass rod; then remove the rag after expressing all fluid. Now add an almost microscopic crystal of common salt, cover with another watch-glass, inverted over the first, and again hold over the flame between the blades of a wide pair of forceps. By this means the remains of the blood are exposed to the action of the acid, which gradually becomes more and more concentrated, for a considerable time, as the latter can only evaporate slowly. The right amount of heat may be judged by taking care not to allow the temperature to rise higher than can be borne by the finger when applied to the edge of the glasses. When the acid has almost entirely evaporated, take the glasses away from the flame, remove the upper one and allow the contents of the lower to dry spontaneously. On examination under the microscope very numerous and perfect crystals will be seen, which are four-sided rhombic plates of a dark brown colour.

Occasionally they are of a more or less oval shape, not unlike small crystals of uric acid. Stevenson[1] states that crystals obtained from sheep's blood are smaller than those from the blood of man or of the bullock, and gives for hæmin crystals from human blood a length of $\frac{1}{2253}$ in. and a width of $\frac{1}{9000}$. This is, however, utterly fallacious, as the size of the resulting crystals depends greatly, if not entirely, on the rate at which the final evaporation is carried on; for I have obtained crystals from human blood which, under a power magnifying 350 diameters, looked about a quarter of an inch in length, while at another trial from the same specimen of blood and under the same power the crystals were hardly visible.

Hæmin crystals can be obtained by the method given above from stains of considerable age and of extremely small size, so that if the test does not succeed it is probably due to some

[1] 'Medical Jurisprudence,' p. 577.

error in manipulation, the most frequent being perhaps the addition of too great a quantity of salt, which appears in some way or other to prevent the crystallization of the hæmin. Indeed, if the blood be recent it may not be necessary to add any salt at all, as sufficient for the success of the test is contained in the serum, so that in such a case to add more of this substance is simply to invite misfortune.

2. *Spectrum analysis.*—For the application of this test a micro-spectroscope is required, the best form of which is undoubtedly that manufactured by Zeiss, of Jena, which shows a comparison spectrum and is also provided with a scale of wave-lengths, the importance of which for accurately localising the various absorption bands present is sufficiently obvious.

When a solution containing blood is exposed to the air for any length of time the scarlet or purple colour gradually changes to a brownish tint, and the same change takes place in stains on linen or other fabric. This is due to a conversion of the oxy-hæmoglobin into met-hæmoglobin, or the further stage of hæmatin. Consequently when such a stain is dissolved in water and the solution examined with the spectroscope, instead of the well-known bands of oxy-hæmoglobin a single band on the red side of the D line will probably be seen, while the blue end of the spectrum will be to a considerable extent obscured. Gamgee[1] has shown, however, that by the action of reducing reagents met-hæmoglobin can be converted into reduced hæmoglobin, which then gives a single band between the D and E lines.

Linossier, however, finds that the most sensitive spectroscopic reaction of blood is that given by reduced hæmatin, a statement which I can fully corroborate from personal experience. The blood-stain is dissolved in water and a drop of freshly prepared saturated solution of hyposulphite of soda added, when the spectrum of reduced hæmoglobin appears at once; a couple of drops of concentrated soda solution is now added, which decomposes the hæmoglobin into globulin and reduced alkali hæmatin, the spectrum of the latter consisting of two bands between D and b, the one nearer the red end lying between D and E, about in the position of that of reduced hæmoglobin, and being well marked; indeed, this intense

[1] 'Physiological Chemistry,' p. 109.

band is the only one to be distinctly observed in dilute solutions, and it ought to disappear if the liquid is heated to 50° without agitation, and reappear on cooling; it ought, further, to disappear when shaken in the air and reappear on addition of a drop of sodic hyposulphite. This test applies even to putrid blood. Should the blood-stain have become insoluble in water, dissolve it in ammonia and reduce by adding one or two drops of a solution of ferrous sulphate and tartaric acid, thus practically applying Stokes' reagent.

The objections usually urged against the spectroscopic test, that solutions of certain substances, such as, for instance, the red colouring matter in the feathers of the Cape lory, give absorption bands somewhat resembling those of oxy-hæmoglobin, are thus seen to be of little or no importance, since they do not on further treatment give anything resembling the absorption bands of reduced alkaline hæmatin, which we have seen should invariably be sought for as giving the most reliable evidence as to the presence of blood.

3. *Microscopical evidence.*—This I have left for consideration till the last because, although of great value if the presence of blood-corpuscles can be demonstrated, it will probably be impossible of application in this way unless the stain be very recent, since the corpuscles seem often to break down and disappear within two or three days, or even less. Still, it will be desirable to seek for them; and the plan of procedure usually advocated is to place a few small particles of the coagulum, or, if these cannot be obtained, a few teased-out fragments of the fabric on a slide, and after breathing on them gently once or twice, to cover with a slip of thin glass. As soon as a red margin appears, the corpuscles are to be sought for with a fairly high power of the microscope in the fluid portion.

If the stain be sufficient in size, the colouring matter may be dissolved out in various reagents of such a density as to alter the corpuscles as little as may be, water being inadvisable, as it causes them rapidly to swell up by endosmosis and disappear. For this purpose serum, hydrocele fluid, solutions of sodium sulphate or common salt, or a 10 per cent. solution of glycerine in distilled water have been employed. Of these the first might be expected to give the best results, but if used

we must be certain that it contains no corpuscles itself, or otherwise we might be led into error.

In all the text-books will be found measurements, originally made by Gulliver, of the diameter of the red corpuscles of man and of various animals in *fresh* blood, since the publication of which, Richardson, of Philadelphia, U.S.A., Seiler, and others have claimed that they are able by this means, and with the aid of high powers of the microscope up to about 750 diameters, to distinguish human blood-corpuscles from those of the domestic animals. This, however, has reference only to fresh blood, and not to dried or partially dried stains, while, moreover, most English and foreign skilled microscopists are agreed that it would be unsafe by this method to testify before a jury at a criminal trial that even a sample of fresh blood was undoubtedly human, since there are several animals, more particularly the guinea-pig, dog, hare, and rabbit, whose blood-corpuscles are so precisely similar to those of man in size that even with the highest powers of the microscope they could not with any certainty be distinguished. In addition, the factor of disease might have to be taken into consideration, since we know that in such case the size of the corpuscles may vary in the same animal within wide limits. Much more, then, would the results be open to criticism in the case of corpuscles obtained from a dried stain, since it would be impossible to say that their size had not been altered by the solvent employed, particularly as a series of experiments on the specific gravity of the blood, conducted by Dr. Sherrington and myself, have shown us that not only does the density of the blood vary in man between considerable limits, but that it has a different range apparently for every animal, and consequently it is impossible to state what should be the specific gravity necessary for a solvent which should absolutely prevent any alteration in the size of the corpuscles obtained. I think, then, that we cannot but agree with an editorial note which recently appeared in the 'Lancet' on this subject, that if one cannot speak with absolute certainty, or at least with the highest degree of probability, such evidence would be dangerous and might be fatally misleading.

What has just been stated applies particularly to mam-

malian blood, but it should not be forgotten that in certain cases valuable evidence may possibly be obtained, if we have to deal with the blood of birds, fishes, reptiles, or amphibians, in which the corpuscles are oval and nucleated, since doubtless with the aid of suitable solvents they may be obtained without sufficient alteration to conceal their characteristic shape. If such evidence were forthcoming, we could at any rate be certain that we had not to deal with mammalian, inclusive, of course, of human blood, a point which has before now been of importance in a criminal trial, as when a prisoner may have accounted for certain spots of blood by the statement that he had been handling fish or game; while on the other hand, supposing always that corpuscles can be obtained, we might equally be able to say that a given stain did not consist of the blood, for instance, of a bird; but further than this we should not be justified in going. It is advisable, then, that no single test should be relied on alone, to determine the presence of blood, but in the guaiacum and hæmin tests, together with the use of the micro-spectroscope, we have three methods which may all be applied in turn to the colouring matter of a stain, even of minute size; and if positive evidence is obtained from all three, as is quite possible in competent hands, we are of course justified in stating with the utmost certainty that blood is present.

It matters not, as I have said, whether the stain be recent or old, or even whether it has been partially removed by washing, as long as any colour is left; and thus the presence of hæmoglobin or its derivatives may be detected in cases in which it would be quite impossible to find any blood corpuscles.

As has been stated, the application of tincture of guaiacum may be open to a certain amount of fallacy, and crystals of hæmin may not for some reason or other be demonstrable, but there is no known substance which answers to all these tests, or indeed to any two of them, with the exception of the colouring matter of the blood.

We have, then, in these methods most delicate means of detecting the presence of blood, although they may give us no evidence as to the source from which it was derived. I do not, however, pretend that in this section of my paper I have

advanced any novel tests, although I hope I may have added in some small degree to the knowledge of the best methods of applying those we already possess.

We now come to the consideration of the question as to whether *human blood* is present or not.

In 1887 I published in 'St. Thomas's Hospital Reports,'[1] and also somewhat less fully in the 'Lancet,'[2] the results of an investigation into the pathology of the blood in pernicious anæmia, most of which were also embodied in a paper read before the Medical and Physical Society of St. Thomas's Hospital in November, 1886. During the two years previously Dr. Bristowe had had a number of cases of this somewhat rare disease under his care in the wards of St. Thomas's Hospital, and through his kindness I had the opportunity of examining the blood on a considerable number of occasions.

I was able in a great measure to confirm the conclusions previously arrived at by Eichorst, Byron Bramwell, and others; but in addition I found, what had not been previously noticed, that when a drop of the blood was removed from the finger and allowed to fall on a glass slide, and then when the edge of the drop had dried somewhat a cover-glass was gently placed upon it, crystals of hæmoglobin gradually formed in the film of blood, in from ten to forty-eight hours, without any further preparation. The only exception to this was in the case of patients who had been treated with arsenic for some days, after which crystals could not be obtained, although if then the arsenic were discontinued for an equal length of time they again put in an appearance.

These observations were of the greatest interest to me because up to this time I had not been able to crystallize human blood, although crystals were obtained from the blood of some of the lower animals, whose hæmoglobin has almost precisely the same composition as in man, with the greatest ease, notably from the guinea-pig and rat; the general method of preparation depending on the breaking up of the red corpuscles by alternately freezing and thawing the blood, or by treating it with chloroform, ether, or a solution of bile-salts,

[1] 'St. Thomas's Hospital Reports,' New Series, vol. xvi, p. 155.

[2] 'Lancet,' May 26th, 1887.

when, on allowing the blood to stand for some hours, crystals are deposited, this part of the process being often hastened by the addition of a small quantity of alcohol. Human hæmoglobin, however, is very soluble and consequently is much more difficult to obtain in the crystalline form, the order of solubility and so of facility of crystallization being given by Gautier in the following order for various animals:

(1) Rat, guinea-pig, squirrel, and then, with a considerable interval, (2) cat, dog, horse, and man.

Rollett states that he obtained human hæmoglobin by a modification of the method given above, but although crystals are figured in all the text-books, no English physiologist to whom I have applied has been able to furnish me from personal experience with any method of obtaining them directly from the blood; while Dr. Allchin informed me that when working at the subject of blood with Dr. Michael Foster at University College they were quite unable to obtain any. Stirling and Brito, however, obtained them from the stomach of leeches which had fed on human blood, after a lapse of several weeks, a method which I have also followed with success.

It seemed to me, however, that it might be possible to procure crystals from human blood in a more direct manner by imitating as much as possible the conditions which obtain in pernicious anæmia. I was particularly struck, when examining the specific gravity of the blood in some of the later cases, by means of a modification of the method originally introduced by Prof. Roy, of Cambridge, to find to what a low degree it had fallen, the specific gravity usually ranging between 1028 and 1038, while in health it should be about twenty degrees higher than the maximum of these observations.

In the disease under consideration the lower specific gravity is obviously due to the extremely small number of red corpuslces present, the plasma therefore being in proportionately much greater quantity than in health. Acting on the supposition that this, together with the lessened consistence of the red corpuscles, as evidenced by their abnormal shapes, might account for the formation of crystals of hæmoglobin, when the blood was removed from the body and treated in the manner described, I tried the effect of diluting normal human

blood with serum; that obtained from sheep's blood being used, since it is well known that the serum of one animal tends to destroy the corpuscles of another animal into whose circulation it may be introduced, or whose blood is brought into contact with it after removal from the body.

At first my success was not great, although in a few instances crystals were formed; but on one occasion having used some serum which had been set aside in the laboratory for some days in rather warm weather, and which had consequently become decomposed, I found that crystals appeared in every instance in which it was used.

This being the case, twenty-five members of the pathology class at St. Thomas's Hospital were selected who seemed particularly healthy, and whose blood consequently might be supposed to be perfectly normal. Each of these gentlemen kindly allowed a few drops of blood to be abstracted from a finger, and from the blood of every one from three to six preparations were made, which after an interval, differing slightly in each case, and apparently depending somewhat on the amount of serum added, all showed crystals of hæmoglobin.

A method almost identical with this was published in the 'Lancet'[1] by Bond, of Leicester, who, however, used putrid human serum, the idea in his case being an attempt to imitate the processes of septicæmia, in which, as well as in pernicious anæmia, he found that crystals of hæmoglobin formed spontaneously in the blood when allowed to dry after removal from the body, as I had formerly described; the reason for their appearance, in his opinion, being the presence in the blood of certain ferments, the result of the life-action of various micro-organisms. He further noted that the crystals as shown by the micro-spectroscope presented the bands of reduced hæmoglobin, but he does not appear to have attached any importance to the observation, neither did he give any comparative observations as to the application of the same method to the blood of the lower animals.

The crystals obtained by the method just described are usually rectangular plates, of a pink or pale claret colour when formed in a fairly thick layer of blood, or a greenish tint when the film is very thin; this agreeing with the statement of

[1] 'Lancet,' 1887.

Foster that "in dilute solutions or in a thin layer, the reduced hæmoglobin lets through so much of the green rays that they preponderate over the red, and the resulting impression is one of green." And there can be no doubt both from the microscopic and spectroscopic appearances that they really do consist of reduced and not of oxy-hæmoglobin. This, although its significance seems to have been overlooked by Bond and others, is a point of considerable interest, since it is usually stated, as will be seen from the extracts cited below, that although crystals of oxy-hæmoglobin may have their superfluous oxygen removed by exposure to a vacuum, they never crystallize as reduced hæmoglobin.

"The colouring matter crystallizes as oxy-hæmoglobin, therefore freely expose to the air." "Crystallization is much impeded by the presence of non-crystallizable organic compounds, especially albumen." (Burdon-Sanderson, 'Handbook,' p. 180.)

"The presence of oxygen favours crystallization." "Hæmoglobin exists in two states, either as reduced hæmoglobin, *i. e.* free from oxygen, or as oxy-hæmoglobin. The former is non-crystalline." (Landois and Stirling, 2nd edition, p. 27.)

"In fact the spectrum of hæmoglobin (and of hæmoglobin crystals) is the spectrum of normal arterial blood." (Foster, 4th edition, p. 336.)

Consequently the fact that in attempting to obtain crystals of hæmoglobin from human blood reduction has not been allowed to take place may account for the absence of success in previous endeavours.

In the paper by Stirling and Brito, quoted above, the crystals were stated to be of a pink colour, and the diagrams given in illustration show that they must have consisted of reduced hæmoglobin, although no mention is made of this fact, and in repeating the experiment this supposition has been verified. This, then, evidently forms a diagnostic point of great importance, since there is a universal consensus of opinion, as has already been shown, that the blood of the lower animals invariably crystallizes as oxy-hæmoglobin only. In order, however, to test the question satisfactorily, a number of experiments were made on the blood of various animals by treating them with decomposing serum, and for some time the method

appeared quite ineffectual, as in the case of the bullock, sheep, pig, dog, and cat no crystals could be obtained, although repeated trials were made, not only with sheep's serum but with that of other animals; thus, for example, bullock's blood was treated with sheep's serum, sheep's blood with bullock's serum, pig's blood with both, and so on, to see whether the result was the same in all cases. In later experiments, however, it was found that crystals could be obtained by this method from the blood of the monkey, rabbit, and squirrel; but, except in the case of the monkey, the crystals were found to consist, not of reduced, but of oxy-hæmoglobin, and this notwithstanding that the addition of decomposing serum invariably brought about reduction of the hæmoglobin as it became extruded from the corpuscles and diffused through the plasma as they broke down. As stated by Bond in his paper, this takes place to the greatest extent in a circular area just inside the edge of the cover-glass, but not extending quite to the edge, where there is a layer which is kept in the oxidized condition, probably by absorption of oxygen from the outside air. It is in this intermediate zone of fully-reduced hæmoglobin that crystals are to be found in greatest quantity, both in the case of human blood and of those of animals in which the method succeeds; but in these latter the crystals, which as stated above are of oxy-hæmoglobin, stand out in a most marked manner from the groundwork of reduced hæmoglobin—the contrast between the uniform pale-claret coloured basis and the scarlet or more often yellow colour (from the thinness of the layer) of the crystals being most remarkable.

In the specimens of squirrel's blood prepared in this manner it was found that in every case the resulting crystals presented the form of fine needles or rhombic prisms, the needles sometimes being collected into bundles, while in no case were the usual hexagons so easily obtained by other methods seen. In the present instances, however, these hexagons did not once put in an appearance, so that it seems that squirrel's blood, like that of the rat, is capable of crystallizing in two distinct forms.

As far, then, as is known at present, the blood of the monkey is the only exception to the rule that when crystals are obtained from the blood of the lower animals it invariably

consists of oxy-hæmoglobin, while those which can be obtained from human blood by the use of putrid serum as invariably consist of reduced hæmoglobin. At first sight it might appear that the fact of monkey's blood acting like human when treated with decomposing serum was a serious objection to the foundation of any method of diagnosis between the blood of man and that of other animals, but on consideration it will, I think, be found that the obstacle is not altogether an insurmountable one, for the reasons that if crystals can be obtained, they would hardly be taken for those of man, their shape being quite different in the two cases—those of man, as I have before stated, being almost invariably rectangular plates, while the crystals obtained from monkey's blood are for the most part diamond-shaped plates, of which two adjoining sides are longer than the other two, or else six-sided crystals like those of the ox and sheep.

The blood of many animals, however, particularly of those which come under the term "domestic," altogether refuses to crystallize by the method that has been advocated for human blood, and consequently unless we can control such negative experiments with some of a more positive kind, it would obviously be unfair to base any definite opinion upon the results obtained; for although if we find that crystals are formed, and that they consist of reduced hæmoglobin, we may say, after excluding the possibility of the blood being that of a monkey, that it undoubtedly *is* human; still, on the other hand, if crystals are not obtained, it would, in the absence of evidence to the contrary, be unsafe to assert positively that it was *not* human.

Fortunately, however, we possess also a method for carrying out such control experiments. After careful trial of the various means suggested by different observers for obtaining hæmoglobin crystals from the lower animals, I have come to the conclusion that the most reliable one is that given by Gamgee,[1] which is briefly as follows:—To defibrinated blood add about one sixteenth of its volume of ether and shake the mixture for some minutes until it becomes perfectly transparent or laky. It is then to be set aside in a cool place for

[1] 'Physiological Chemistry,' p. 87.

a period varying from a few hours to two or three days, when crystals form in abundance.

There are, however, one or two points of importance in connexion with the method which have not apparently been previously noticed, and which I communicated to the Medical and Physical Society of St. Thomas's Hospital in 1887. One is that care should be taken that the blood after it has been made laky should be kept under an atmosphere of ether for some time, which may be accomplished by performing the agitation of the blood with ether in a stoppered bottle and gradually allowing the air to escape as the ether is volatilized. By this means the contained air is gradually replaced by ether vapour, while at the same time the small portion of blood which is forced out around the stopper of the bottle on drying fixes it in its place and so prevents ingress of air again. It appears that it is better to leave the bottle in a room at the ordinary temperature than to put it in a cool place as advised by Gamgee. The stopper of the bottle sometimes becomes so firmly fixed that it is with difficulty removed, but by adopting an expedient suggested by our laboratory boy the obstacle is readily overcome. This expedient consists in fixing the flat head of the stopper in the slot formed for the reception of the lock of a door, and then gently and gradually rotating the body of the bottle, by which means we have often been able to get at the contents of a bottle when the stopper had obstinately resisted all other attempts at removal.

It is curious to note the discrepancies among authors who have written about the blood as to the comparative readiness with which the blood of various animals crystallizes. Thus, for instance, Michael Foster[1] states that the blood of the rat, guinea-pig, squirrel, hedgehog, horse, cat, dog, goose, and some other animals crystallizes readily, while that of the ox, sheep, rabbit, pig, and man does so with difficulty. On the other hand, Yeo[2] states that the blood of the cat, dog, horse, *man*, ape, and *rabbit* crystallizes readily, although he allows, with most other authorities, that the blood of the sheep, cow, and pig does so with difficulty. Both Landois and Stirling[3]

[1] M. Foster, 'Physiology,' 4th edition, p. 335.

[2] Yeo, ibid., 1884, p. 187.

[3] Landois and Stirling, 'Physiology,' 2nd edition, 1886, p. 27.

and Yeo agree that coloured crystals are not obtained from the blood of the frog—a statement, however, which I have been able to disprove.

These differences of opinion are doubtless to be accounted for by the different methods employed in various instances, but, as will be noticed, there is one point of agreement in common, namely, that the blood of some of the domestic animals, such as the bullock, sheep, and pig, which in medico-legal work we are most likely to be required to distinguish from human blood, is just that which is with most difficulty crystallizable.

By employing Gamgee's method, however, in the way I propose, this apparent difficulty is altogether overcome, for I have found that, as the results of my experiments, the blood of all these animals is with certainty crystallizable if it be allowed to remain for a sufficient time in contact with the ether. The right period is readily hit upon by removing a drop of the blood to a slide after varying lengths of time (in the case of the animals mentioned two days at least), and then, when the edges of the drop are slightly dry, gently lowering a thin cover-glass on the surface of the drop. The cover soon becomes fixed by the drying of the blood at the edge, and then if the preparation be examined under the microscope the commencing formation of radiating crystals of oxy-hæmoglobin will often be seen in an hour or so, while they gradually enlarge in size to such an extent as sometimes to occupy the whole of the space beneath the cover-glass. If when they first become visible the slide be "ringed" with Canada balsam or asphalte varnish, they retain their shape often for a considerable length of time. The crystals obtained by this method are all very similar in shape, but they all agree in differing in this respect from the right-angled prisms which are obtained from human blood.

It is advisable, as I have stated, not to cover the drop at once, as if this point be not attended to, the large vacuoles caused by the presence of the ether seriously interfere with the formation of the crystals.

In this manner the blood of all the common animals has been crystallized, the list comprising the blood of the following :—

1. Horse,	5. Dog,	9. Guinea-pig,
2. Bullock,	6. Cat,	10. Rat,
3. Sheep,	7. Rabbit,	11. Mouse,
4. Pig,	8. Squirrel,	12. Chicken,

which suffices to show that the method has a wide range of applicability. I am quite aware that there are other animals whose blood it would be advisable to submit to the same test, but the work having been done at scattered intervals, the matter cannot be said to have been by any means completely thrashed out as yet. The list, however, practically includes all the domesticated animals whose blood is at all likely to be confounded with that of man, and so consequently the value of the method as a comparative one may fairly be said to have been demonstrated.

As a matter of precaution human blood was subjected to the same test, with the result that usually no crystals could be obtained, although in a few instances they put in an appearance, but again with the important difference, on which stress has already been laid so much, that when found they invariably presented the appearances of *reduced* hæmoglobin, so that the fact of their occasional appearance does not in any way militate against the value of the method.

It will thus be seen that by the employment of the two tests described we are able to state with certainty, not only that a given specimen of blood is human blood when we find crystals of reduced hæmoglobin as the result of the addition of decomposing serum, but also, if they cannot be obtained in this way, by then treating the blood with ether in the proper manner, we may obtain proof positive that it must be blood other than human.

There is yet another method by which human hæmoglobin may be crystallized. Burdon-Sanderson[1] states "that on the addition of a dilute solution of bile crystals, *i. e.* crystals of glycocholate and taurocholate of soda to blood, a great number of the corpuscles are dissolved, so that the blood becomes distinctly laky, and if it be derived from a suitable source and not too much diluted, the colouring matter crystallizes. On this fact one of the numerous methods of obtaining hæmoglobin (in bulk) is founded."

[1] 'Handbook,' p. 179.

In Gamgee's 'Physiological Chemistry'[1] we find two methods based on this principle, which, however, he says are not to be recommended. By the injection of a solution of bile salts into the circulation also, the corpuscles may be broken up to a certain extent, in consequence of which hæmoglobinuria may result.

Now, of course the bile itself is a "dilute solution" of bile salts, and in the early part of last year one of my assistants in the Physiological Laboratory, Mr. Frederick, made some experiments for me on the action of bile on the blood of various animals, as we were then investigating a most interesting case of biliary fistula, which was at that time in the wards of the hospital under the care of Dr. Bristowe. He found, as the result of his experiments, that a drop of human blood, when treated on a slide with a drop of bile, preferably cat's bile, usually showed in the course of a few days well marked crystals of hæmoglobin, a fact which I demonstrated to my histology class at the time.

On examining the specimens thus formed, I found that here again the crystals were composed of reduced and not of oxy-hæmoglobin, so that it seems perfectly certain that this must be the normal state in which alone hæmoglobin crystallizes in man, a point which, as I have before stated, probably accounts for the fact that former observers, who, in accordance with the directions of the text-books, took care to keep the blood well oxygenated when endeavouring to obtain crystals of the colouring matter, invariably failed in their attempts with human blood.

This method I have not used to any great extent, because the supply of the requisite material, cat's bile, is necessarily somewhat limited, and indeed, although it is very interesting, as corroborating some of the points already insisted on, I should hardly have mentioned it, but for the fact that a paragraph appeared, strangely enough, in one of the penny weekly papers, under date January 19th, 1889, to the following effect: "A Spanish physician gives a new method of distinguishing between human and animal blood. Mixed with a little bile, small crystals form in the blood, which in man are right-angled prisms; in the horse, cubes; in the dog, right-

[1] P. 86.

angled prisms very similar to those in human blood; in sheep, rhomboidal plates; in pigs, rhomboids; and in chickens, more or less regularly, cubes." On inquiry of the editor, it appears that the paragraph was copied from an American paper, the 'Arkansaw Traveller,' of date unknown.[1]

It is curious, to say the least, that no mention of the Spanish physician and his work should have appeared in any of the medical papers, and it is difficult to judge of what he may have done from a scant paragraph in a lay paper; but if this presents a true summary of his work, we can safely say that it is not of much import. In the first place, as can be seen by preparing a number of specimens of the blood of an animal other than man, by any of the methods that have been given, the resulting crystals are not by any means invariable in their shape, although the different shapes present will all belong to the same crystallographic system.

According to his own showing, moreover, the crystals from dog's blood are very similar to those in that of man, a point which if true would at once condemn the method; while he has apparently not observed what I take to be the point of fundamental importance—the differing degree of oxygenation of the crystallized hæmoglobin in man and in the lower animals.

The methods which up to the present, then, have been successful in demonstrating crystals of hæmoglobin in human blood—and which all agree in the point just mentioned, the presence in the crystalline form of reduced hæmoglobin—may be recapitulated as follows:

1. The addition to the blood of decomposing serum, or, apparently even better, of pericardial fluid.
2. Treatment with bile.
3. Agitation with ether.
4. Semi-digestion in the stomach of the common leech; of which the first is the only one to be recommended as being invariably successful.

Thus far I have only spoken of the blood as obtained immediately from the animal, but the methods advocated have

[1] Since the above was written Dr. MacMunn has kindly sent me the following references:—L'Crosi, 'Giornale de Chimica, Farmacia, e Scienzi Affini,' No. 2, 1880; Dr. Vincenzo, 'Piset y Cervera;' 'Chemical News,' Nov. 19th, 1880.

possibilities beyond this, although I must candidly confess that I do not think that they are capable of demonstration with such infinitesimal quantities as are sufficient for showing conclusively the presence of blood by means of the hæmin test. If the blood be present in fair quantity, and has been recently effused, there would probably be little difficulty in discovering whether it is human or not; but if the quantity be but small, and the stain be not very recent, the difficulty is much increased.

The results of a few experiments copied from my note-book will perhaps best show the *modus operandi* and the extent of the capabilities of the methods I propose.

1. Two drops of sheep's blood were placed in a small stoppered specimen tube three-sixteenths of an inch wide and two inches long, and prepared with ether in the usual manner. After three days preparations made on slides, as described, showed abundant crops of crystals the next day, so that it is obvious that small quantities of blood can be operated with.

2. Two drops of sheep's blood were placed in a specimen tube with twice the amount of water and prepared with ether as before. Preparations made on slides showed good crops of crystals, so that they can be obtained from minute quantities of *diluted* blood. This is of importance with regard to the removal of the colouring matter of stains by what would probably be a comparative excess of solvent.

3. A few drops of sheep's blood were purposely spilt on a handkerchief and left to dry; three days later a small piece of blood-stained rag, about a quarter of an inch square, was cut out and divided into tiny slips. These were placed in one of the tubes with two drops of water until the colouring matter was dissolved out, this being hastened by expression against the side of the tube with a fine glass rod. The bits of rag were then removed and the resulting infusion was divided into two parts (*a*) and (*b*).

(*a*) Was treated with decomposing serum on a slide, which gave *no* result.

(*b*) Was shaken in a tube with ether after the usual plan and when what was judged to be a sufficient time had elapsed a couple of preparations were made on slides, a hair being inserted under the edge of the cover glass on one side so as

to obtain a thicker stratum of fluid. In these, next day, a scanty crop of crystals was noticed, which appeared, however, quite characteristic, thus showing, what of course was known before, that it could not be human blood.

Experiments carried out on the same lines with the blood of other animals and also with human blood gave equally successful results. Up to the present I have not had sufficient opportunity of carrying out an exhaustive series of these experiments, but from what has been said it will be seen that in even a small stain, at any rate provided it be fairly recent, it is quite possible to prove the required point.

On theoretical grounds—for I have not as yet been successful in my attempts—we ought to be able to recognise *human blood* in old stains almost as well as in recent, for it is well known that after an initial change of most of the oxy-hæmoglobin into met-hæmoglobin, a stain under ordinary circumstances may undergo no further alteration after the lapse of years. It has been shown by Gamgee[1] and other observers that met-hæmoglobin, at first thought by Sorby to be a per-oxy-hæmoglobin, but more probably a stage in the decomposition of hæmoglobin into hæmatin and a protein,[2] can be converted by the action of reducing agents into reduced hæmoglobin, the form in which alone the colouring matter crystallizes in man; so that we might expect that the addition to the colouring matter of a stain, which had become, by age, converted into met-hæmoglobin, of decomposing serum or pericardial fluid, which act as most efficient reducing agents, should be successful in bringing about the formation of crystals almost as well as in the case of more recent blood. In such a case, since we find that the blood of all other animals, with the solitary exception of the monkey, will not crystallize in like manner, we should have all the proof that was necessary, provided crystals formed, although, as before stated, in the opposite case we should only be justified in saying that *probably* it was not human.

Some specimens of putrid serum undoubtedly act much more energetically than others in bringing about the crystallization of human blood. Whether this be due, at any rate in

[1] 'Physiological Chemistry,' p. 107.

[2] Hoppe-Seyler.

part, to the stage to which decomposition has advanced is at present uncertain, but a series of observations are being carried out on the bacteria present in decomposing serum, and also on certain septic and pathogenic bacteria, known to possess reducing powers, the results of which, however, must be left for a future communication.

THE DIAGNOSIS AND TREATMENT

OF THE

PYÆMIC COMPLICATIONS OF EAR DISEASE.

By H. P. HAWKINS, M.A., M.B.,
RESIDENT ASSISTANT PHYSICIAN.

The differential diagnosis of the numerous intracranial complications of ear disease is admitted to be difficult, the more so as these conditions frequently coexist, and that too in various combinations ; while the importance of exact and early diagnosis cannot be overrated at a time when most of them, if not all, are being brought within the reach of operation. The position of the physician in the matter is clear. Practically all cases other than mere superficial mastoid abscess are found in medical wards, for they are sent up to the hospital as suffering from pneumonia, bronchitis, enteric fever, or meningitis, and general knowledge is required to overcome the initial diagnostic difficulty, where medical conditions occur in the possessors of chronic ear disease, and aggravate its symptoms or simulate its complications.

Perhaps some of the difficulty arises from an attempt to differentiate and recognise each pathological variety, while a larger but less exact view may lead to a more correct treatment. There is a large class of cases which have the pyæmic condition as their prominent feature, a condition difficult to define, but sufficiently well understood for the present pur-

pose. From the clinical point of view these cases should be considered to form an essential group in spite of their pathological diversity, and, what is more important, they seem to stand or fall together as being surgically curable. Seven such cases have recently been in the wards, of which six died, while the seventh recovered after operation. The physicians under whose care they were placed have kindly allowed me to make use of them.

Taking pyæmia, then, as the chief condition common to these cases during life, various pathological changes are found in the post-mortem room to have been its source. We may have a subdural abscess either on the tegmen tympani near the petro-squamous fissure, and perhaps extending down on the posterior surface of the petrous bone, or in the groove for the lateral sinus, according to Barker most commonly in the former position. Such abscess may be absolutely uncomplicated, or it may communicate with the middle ear or with the lateral sinus through the anterior or outer wall of that vessel, the sinus containing soft fœtid clot; or the sinus may contain such clot without perforation of its wall. The bone lying between the tympanum and the abscess may be apparently healthy, or be softened and discoloured, or there may be simple caries around the tympanum without abscess or other disease, or with such caries the lateral sinus may contain softening clot. All these conditions, apparently capricious in occurrence and limitation, are attended with pyæmia. Cases of coexistence of one or more of these conditions with meningitis or with cerebellar or temporo-sphenoidal abscess need not now be considered.

Exact histological investigation into the mode of production of these various changes is wanting. One would like to know whether the apparent healthiness of the bone intervening in some cases between the tympanum and the subdural abscess is real, and what is the relation between thrombosis of the sinus and the formation of the abscess. At present one can only tabulate the rough post-mortem results and frame a hypothetical plan of origin, in which the veins, the larger ones serving the tympanic mucous membrane as well as the smaller ones proper to the bone, play the leading part.

A septic phlebitis may be supposed to extend along the veins from the tympanic mucous membrane through the petro-squamous fissure, or along the veins from the tympanic periosteum through the bone to the groove for the lateral sinus, leading to the formation of a subdural abscess on the tegmen tympani or in the groove respectively. The perforation of the tympanic roof in the former case probably only occurs when this bony plate is unusually thin, and its relation to the formation of the abscess in time of occurrence is uncertain. Barker has suggested that cases of supposed spontaneous evacuation of a cerebral abscess through the middle ear are cases in which the abscess is subdural, and secondary perforation of the roof of the tympanum takes place. In Dr. Bristowe's case there is nothing in the history enabling us to determine the sequence of events, but it would seem most probable that perforation is secondary, the bone being deprived of blood-supply on both sides. When perforation into the sinus occurs it can only be secondary; in Dr. Payne's case, where this occurred, the sinus must have been previously thrombosed, and it is reasonable to suppose that this is always so. Phlebitis may travel from a subdural abscess in either situation along the veins of the dura mater to the lateral sinus, inducing in it a similar condition. The inflammation may travel along the veins of the bone without producing visible affection of the bone itself, or it may spread laterally in the bone, leading to softening and discolouration; and, finally, simple tympanic caries supplies the open-vein condition required for pyæmia, whether the lateral sinus is affected or not, and it is noteworthy that pyæmia may be produced by the entrance of the virus into the jugular vein without affecting the sinus on the way.

The following cases are instances of some of these conditions, proceeding from the simpler to the more complex.

Case 1. *Simple subdural abscess with pyæmia.*—J. M—, æt. 24, was admitted on November 14th, 1888, under Dr. Ord.

He had had measles when a child, and one period of otorrhœa seven years before admission. The onset of the present illness was sudden, represented by chilliness soon passing into actual shivering, accompanied by discharge from

the right ear, but he managed to do his work for the next five days.

He did not seek medical aid till ten days from the commencement of his illness, and then only in consequence of severe pain in the left side, due doubtless to pyæmic infarction of the lung and pleurisy. The discharge from the ear only lasted a few days, and there was an entire absence of earache and headache throughout the illness. As a result of the slight obtrusiveness of the ear symptoms he arrived at the hospital with the doctor's certificate stating that he was suffering from pneumonia, and some time elapsed after his admission before the real condition was discovered.

After admission his illness took the form of pyæmia with almost daily rigors, progressive loss of strength, and advance of the pulmonary and pleural signs accompanying infarcts. Death occurred on the twenty-sixth day of his illness, twelve days after admission. There were no local signs about the mastoid process, no pain, tenderness, redness, or œdema; the optic discs were normal throughout.

The post-mortem disclosed numerous ragged cavities in both lungs; brain, membranes, sinuses, and petrous bone healthy. The only naked-eye change beyond thick pus in the middle ear and mastoid cells was a collection of about half a drachm of pus between dura mater and bone, lying between the eminence of the superior semicircular canal and the upstanding squamous part of the temporal bone.

Case 2. *Subdural abscess, thrombosis of lateral sinus, and pyæmia.*—W. F—, æt. 24, was admitted on May 20th, 1888, under Dr. Payne.

He had been ill about ten days before admission, was under the care of a medical man, and was sent up to the hospital by him with a certificate to the effect that he was suffering from acute bronchitis. Bronchitis he certainly had, his rhonchi needed no stethoscope, but the lung signs were accompanied by a yellow skin and conjunctiva, delirium, vomiting, high fever, and slight bleeding from the right ear.

On examination a polypus was found blocking the right meatus, but it was not thought worth while to remove it, and he died the day after admission. There was no optic

neuritis, and there were no local signs about the mastoid process.

He was found to have an accumulation of greenish-yellow pus lying on the roof of the middle ear between bone and dura mater; this extended down on the posterior surface of the petrous bone, and there communicated by a round aperture with the lateral sinus, which contained softened clot; brain, membranes, and bone were healthy.

Case 3. *Subdural abscess, thrombosis of lateral sinus, disease of bone, and pyæmia.*—W. S—, æt. 11, was admitted on August 15th, 1888, under Dr. Ord.

He had had otorrhœa off and on after measles at the age of five.

His present illness began nine days before admission with headache, vomiting, and pain in the left ear, quickly followed by discharge from that ear and rigors. Seven days afterwards sudden pain in the left side marked the onset of pyæmic lung disease. He was extremely ill on admission, his condition and symptoms being practically identical with those of the preceding case. The post-mortem condition was nearly the same in the two cases; slight raising of the dura mater from the bone by pus in the outer part of the sinus-groove with offensive clot in the lateral sinus, but there was also a tract of softened bone lying between the tympanum and the subdural abscess. In this case there was slight tenderness about the mastoid process; the optic discs were normal.

In the hospital 'Reports' of last year Dr. Bristowe narrates four cases of intracranial complication of ear disease, to which he has kindly allowed me to refer. Two of these were cases of pure sinus-pyæmia, and a third may be considered to belong to the same category, although there coexisted a small patch of anterior basal meningitis.

The symptoms of these cases bear as close a family resemblance as do the post-mortem conditions. High fever, rigors, prostration, and discharge from ear with pneumonic and pleuritic signs of later occurrence form the salient features, identical, in fact, with those of the cases outlined above;

but there was a greater prominence of local symptoms, severe pain about the affected ear, with pain in the occiput and neck on moving the head in all three cases, and in two of them actual swelling and tenderness about the upper part of the sterno-mastoid. The condition after death was nearly the same in all,—inspissated pus in the middle ear and mastoid cells, admirably adapted in position and consistency to the life of micro-organisms, more or less disease of the bony wall of the tympanum, and softening thrombus in the lateral sinus, in one case extending down the jugular vein as far as the angle of the jaw. In one case a subdural abscess on the tegmen had apparently discharged into the middle ear. The duration of illness was sixteen, fifteen, and nineteen days respectively.

By superposing these cases and making use of others recently recorded, a composite picture is obtained, which may be found to have an outline sharp enough for practical work, so long as their weakness in point of numbers is borne in mind.

In all such cases the ear disease has been of long duration. The onset of the illness is generally sudden, but in some cases the patient has had malaise and slight headache for a day or two before the more acute symptoms appear; "sleepiness" was complained of in three instances. The early symptoms are most commonly earache and headache, often associated with vomiting; if there has been no discharge from the ear for some weeks before, it may begin again on the onset of general symptoms, but if the illness has been preceded by discharge, it seems neither to cease nor to increase in amount; in very few is shivering the first symptom, and in no case actual rigor.

Pain in the affected ear is almost constant, so also is headache; the pain most commonly radiates from the ear over the side of the head, but is sometimes general, sometimes frontal, sometimes occipital; in a few cases there has been pain in the neck on movement of the head, and that where the meninges have been subsequently found uninflamed. There is often tenderness over the mastoid process and of the soft parts below its apex and along its posterior border, but fully as often no tenderness whatever is complained of in this

region. Œdema over the mastoid is conspicuous by its absence at an early period; reddening of the skin here occurs once only in twelve cases, and then as a late phenomenon. Tenderness over the upper part of the jugular vein is found about as frequently as mastoid tenderness, and usually in the same cases; actual swelling or swelling and redness here are not uncommon, but are always of late occurrence, and seem to be a certain indication of affection of the vein, though the possibility of abscess on the inner surface of the mastoid apex must be remembered. A discharge from the ear is nearly always present, offensive to the smell as often as not. The two sides are equally affected in these cases, though a right-sided preponderance is noticeable from comparison of a larger number.

The general condition does not vary much. The face is frequently suggestive of enteric fever, and the mental state bears out the resemblance; clear enough in mind for a few days, a drowsiness steals upon the patient, from which he is roused with increasing difficulty; when roused, his intellectual operation is not retarded, though at night he rambles in his talk; towards the end drowsiness passes into coma. The time required for this mental slide is subject to greater variation than the total duration of the illness; coma may be complete seven days from the commencement of the illness, or may be postponed till the day of death; in one case there was no mental change until four days before death, when the overdue drowsiness set in suddenly, and in one case under the care of Dr. Ord the mind remained clear and active throughout, but both these cases were exceptional in other respects.

Rigors are numerous, often daily; the first rigor may occur as early as the fourth day; on an average it appears about the end of the first week. If rigors cease after the first few days, as sometimes happens, the temperature continues to show large daily variations; perhaps two rises through 4° or 5° in the day. Pyæmic lung-signs, subjective or objective, are invariable, but do not seem to appear during the first week, and are often postponed till the beginning of the third week. Joint-signs are of comparatively rare occurrence, and develop at a still later period if at all.

The bowels are usually confined at first, but diarrhœa commonly sets in as soon as the pyæmia has a grip on the patient: vomiting apart from the rigors is common at the onset as well as throughout the illness, and may be frequent and painful. Towards the end the yellow tinge of conjunctiva and even of skin may become distinct; the skin is usually moist, and sometimes sweating is profuse.

Paralytic symptoms and convulsions are absent, and there is no constant change in deep or superficial reflexes. Optic neuritis seems to occur in about 25 per cent., but looking at its small intensity when present, and its absence in such a large majority of cases, it is perhaps safe to consider it as indicating basal meningitis too slight in amount to influence the prognosis in the absence of other meningitic symptoms.

As far as I know, these cases in the hands of nature are always fatal; the common duration is about eighteen days.

Now, it is quite possible for a patient, suffering from nothing more serious than poisoning by the retention of putrefying pus in the middle ear and mastoid antrum, to present a group of symptoms which differ not a whit in character and but little in intensity from those just described as marking the onset of pyæmia; there may be the sudden access of earache and headache with vomiting and shivering, succeeded by actual rigors and drowsiness. Nor is the differential diagnosis easier when the symptoms are less marked than these, when there is nothing more than local and general pain with fever; the early symptoms of pyæmia may be quite as slight, and one cannot with certainty say that the pathogenic organism is not already engrafted on the old disease. These retention cases, of which the following are instances, are common enough.

Case 4.—G. W—, æt. 10, was admitted on July 21st, 1887, under Dr. Stone.

He had had headache and had been feverish for a few days before admission. On admission there was a profuse offensive discharge from the left ear, no local signs about the mastoid process, and no signs of other disease. For the first week he had severe frontal headache and continued fever with a tendency to subside; for the next week he had

large daily variations of temperature with two severe rigors, maximum 105·4°, minimum 96·4°, and then a rapid and complete recovery. There was more or less earache throughout. Treatment consisted of frequent syringing and quinine.

Case 5.—G. D—, æt. 6, was admitted on June 3rd, 1889, under Dr. Stone.

For six weeks before admission he had been very dull, complaining much of headache; every three or four days he had had attacks, in which he was said to become very hot and thirsty, then white with sweating and vomiting: the mother had noticed that a great increase in the discharge accompanied the subsidence of each attack.

He remained dull and almost motionless for three days after admission, but his temperature was normal; he then had an attack such as his mother had described, the temperature reaching 102°, intense frontal headache, no actual rigor, and no mastoid signs. On the next day a large mass was brought away by syringing, which appeared to be a nearly complete cast of the middle ear, with immediate and so far lasting disappearance of symptoms.

Case 6.—W. G—, æt. 12, was admitted on July 10th, 1889, under Dr. Stone.

There was sudden onset of earache and headache a few days before admission, with feelings of chilliness but probably no rigor; he was said to have spat up blood and matter, important as probably coming from the Eustachian tube. There was a large perforation in the right membrane, but little or no discharge, considerable tenderness at the apex of the mastoid process and below it, with pain on using the sterno-mastoid; the temperature was 102·4° on admission.

For three days fever was high and steady and the boy was very dull and sleepy, spending the whole day curled up on his right side and being with difficulty induced to answer questions. Then, after syringing, came a free discharge of pus from his ear, with rapid and complete return to health.

If the operative treatment of sinus-pyæmia should become established, cases such as these will need protection, their own natural tendency being in the direction of cure. In

some cases distinction by symptoms alone is impossible at an early period. It might be thought that, as the one case is dependent on the retention of pus in the mastoid cells, a condition which at any rate is not necessary for the production of the other, prominence of local mastoid signs such as redness, swelling, and tenderness, would have some presumptive value in diagnosis; but they are as often absent in the one as in the other, and the state of the soft parts over the mastoid process seems to be but a poor guide to the condition of the interior; in four post-mortems made here in the last year the mastoid cells were found full of thick, offensive pus, while during life there had been no visible or palpable evidence of its presence, save slight tenderness in one case. If the onset of acute symptoms should coincide with cessation of the discharge from the ear, one may hope, but cannot feel sure, that the case is one of simple retention-sapræmia; this hope would be strengthened if the patient did not exhibit the degree of illness and prostration which characterises the pyæmic class. But a certain diagnosis can only be made by the somewhat unsatisfactory plan of syringing until recovery or pyæmia is in sight, or by treating the case as being one of the milder form, and in the absence of speedy improvement deciding in favour of the graver complication. This is the method of operative diagnosis suggested by Barker two years ago.

Given one of these doubtful cases: if the perforation in the membrane appears to be ample, frequent antiseptic syringing will be sufficient; if it is a small one, enlarge it. The subsidence of symptoms upon evacuation of pus from the middle ear is very rapid; there may be a fall of three or four degrees to normal associated with hourly improvement in the looks and feelings of the patient. If no such result follows, the mastoid antrum should be laid open, and a free passage for syringing established between the mastoid wound and the auditory meatus. If this is done thoroughly, and no relief is thereby obtained, we are face to face with one or more of the conditions enumerated above as being associated with pyæmia, and I believe direct treatment should be proceeded with, as for similar conditions in any other part of the body; while if relief is obtained the patient is cured for the present

at all events by what cannot be called a very serious operation, and is, moreover, possibly placed in a better position for the avoidance of future attacks.

To make a fair guess in some few cases as to the particular pathological condition from which the pyæmia flows seems to represent the limit of our present knowledge, but the impossibility of even such a guess need not be considered an obstacle to surgical treatment. The possible forms of disease lie grouped together under two square inches of the skull wall, and if the mastoid cells and middle ear have been completely cleansed without alleviation of symptoms, and nothing further is attempted, death is inevitable. There is a certain but small risk of operating and finding either an irremediable condition or a condition of which a part only will be discovered and removed, as where cerebral abscess or meningitis coexists with subdural abscess, the pyæmic symptoms masking all others ; while the risk of producing more harm than good by interference is no greater than in many better established operative plans.

In his Hunterian Lectures of this year Barker has laid down the operative steps up to a certain point, but he seems to stop short of the logical end. He recommends that the mastoid process be opened up at a point half an inch behind and the same distance above the centre of the meatus ; that if this fails to give relief the bone be gouged away layer by layer until the lateral sinus is well exposed. In this way the common condition of subdural abscess in the sinus-groove is relieved, and successful cases recorded are numerous, but on finding nothing in this situation the still commoner condition of abscess on the upper surface of the petrous bone is to be remembered, and bone further removed in a forward and upward direction until this surface can be explored.

All this is sufficiently easy on the dead subject. There is little difficulty in stripping the dura mater off the bone, and probably less when inflammatory conditions are present. Through a one-inch trephine hole, of which the centre is three quarters of an inch behind and slightly above the centre of the meatus, the dura can be coaxed off the posterior surface of the petrous bone as far as the internal auditory meatus, carrying the lateral sinus with it, and from a

similar hole above the meatus it is easy to reach the summit of the eminence of the superior semicircular canal, so that the whole of the suspected district is commanded.

Barker's reason for examining the groove before the upper surface of the petrous bone in the face of the alleged greater frequency of abscess in the latter position is, I suppose, its proximity to the previously made opening into the mastoid cells, but this course seems to be further recommended by the expediency of examining in all cases the condition of the lateral sinus, for it is difficult to see how a patient is benefited if a subdural abscess is evacuated while the sinus is left containing infective clot, and, even if the sinus appears to be healthy, it is not impossible that division of the jugular vein between two ligatures may still be considered as affording additional protection.

This question of the treatment of the sinus and the jugular vein is a subject for free speculation, but difficult to decide without more practical evidence. In the 'Clin. Soc. Trans.,' vol. xix, Horsley suggested ligature of the vein, but wished to limit the operation to cases where the occurrence of embolism is already indicated. Two facts compose our speck of solid ground: (1) a thrombosed sinus may be laid open and freely washed out without the appearance of a drop of blood; (2) the jugular vein may be certainly tied without any evil result. This latter fact may at first sight appear to be two-edged, inasmuch as if the collateral venous circulation is sufficiently free for the drainage of all intracranial structures by one jugular vein after ligation of the other, it is also free enough to carry the virus from the infected area into the circulation, yet the few cases in which this plan has been carried out show nothing but a good result. Upon ligature of the vein complete stagnation probably occurs in the lateral and petrosal sinuses, but not in the cavernous sinus; sufficient exit is provided by the communications between superior and inferior cerebral veins, between the cavernous sinus and its fellow, between the two lateral sinuses across the occipital protuberance, between the torcular, the occipital sinus and the posterior spinal veins, and possibly between the basilar sinus and the anterior spinal veins. No nervous symptoms have been observed to follow.

The question of the reality of the safety from general infection, which may result from closure of the vein, can only be decided by experiment, and experience so far is in its favour. No doubt the coarse embolism which occurred in Horsley's case (loc. cit.) would be prevented, but will the clot formed in the cardiac end of the divided vein swarm with pathogenic organisms, as does the original clot at the junction of sinus and vein? This will depend largely on the possibility of maintaining the ligation wound in an aseptic condition, situated as it must be in the neighbourhood of the foul upper wound, and on the completeness with which the original infected clot can be removed and the cleansing of the upper portion of the vein carried out by antiseptic syringing. In Dr. Stone's case, upon which Mr. Ballance operated, there was a danger which is probably exceptional,—foul clot extended for some distance down the vein, and this had to be left *in situ* for some time, yet the division of the vein below it was effective, as is shown by the result, and the ligation-wound healed rapidly and cleanly.

The vein being closed in the neck and the sinus laid open so far as it is exposed in the wound, a general pyæmic condition has bounds imposed upon it. There remains a local disease to be met, still foul and infective enough, but freely open to antiseptic treatment while shut off from the circulation. The danger of inducing hæmorrhage by syringing and disturbing the firm terminal clot in the hinder end of the lateral sinus or in the petrosal sinuses must be put into the opposite side of the balance, but no such accident has yet happened. Hæmorrhage from the lateral sinus would be within control, but would entail ligature of the sinus with the necessary consequence of opening the space between dura mater and arachnoid. No doubt the danger is greater in dealing with the right side owing to the common mode of termination of the longitudinal sinus. Division of the vein between two ligatures is obviously a better safeguard against infection than simple ligation; the higher the vein is tied the better, but the essence is the placing of a ligature below all clot. Finally, it seems reasonable that sinus and vein should be dealt with conjointly; there would be little use in meddling with one and leaving the other.

On the one side then lies the danger of hæmorrhage and the possibility of gaining nothing by interference; while on the other side the certainty of death if there is no interference, an air of plausibility about the plan, and a record of a few successful cases, seem to lead in the following direction from the better to the less assured.

If a subdural abscess is found and the sinus is thrombosed and there is reason to believe that the thrombus extends into the vein, wash out the one and tie the other. Dr. Stone's successful case is given later in detail. If the sinus is thrombosed but the vein is not affected, less could hardly be done; to place trust in the clot at the junction of sinus and vein as a barrier against infection, even when the softening clot above has been removed, does not commend itself; a successful case by Arbuthnot Lane is recorded in the 'Clin. Soc. Trans.,' 1889.

Sinus intact with subdural abscess represents one of the cases on which Arbuthnot Lane has operated: the pus was removed and the vein tied, and, though death finally ensued, the immediate improvement of symptoms was so marked, that it is fair to conclude that the method was right, while the pyæmic condition was too firmly established to be upset by a late withdrawal of its source.

A thrombosed sinus without subdural abscess may occur as the result of caries around the tympanum, and it seems only consistent to deal with sinus and vein as before. But the maximum of doubt is reached in the case (probably rare but certainly occurring) of pyæmia with a normal sinus and without subdural abscess; here after exploration upon Barker's lines nothing is found to account for the constitutional condition, and in the absence of affection of the sinus one may well hesitate to tie a healthy vein. But it must be remembered that the whole operative series has been a graduated one, that the existence of pyæmia is our postulate, the dependence of the symptoms upon mere retention of putrefying pus having been excluded by the throwing of mastoid cells and tympanum into one easily cleansable chamber, and that death probably cannot be avoided but by closing the entry through which the virus gains admission into the circulation. A more legitimate matter for doubt is

the attainment by ligation in such a case of anything more than postponement of death ; there may be extensive caries of the petrous bone too deep to admit of treatment or natural cure, and of the twofold *rationale* in all the cases previously considered, viz. the removal of the poisonous spring and its barrage from the general circulation, a part only, and perhaps the lesser part, is here possible, yet such a consideration is allowed little weight in many questions of surgical procedure, which in point of gravity of operation *per se* are certainly not inferior to that under discussion.

The following case illustrates the method of diagnosis by successive operation, as well as the effects of ligature of the jugular vein.

Case 7. *Subdural abscess, thrombosis of lateral sinus, pyæmia. Operation, recovery.*—H. S—, æt. 21, was admitted on May 24th, 1889, under Dr. Stone.

He had had a discharge off and on from his left ear for fifteen years, but there had been none for some time previous to his present illness. On May 13th he felt a little pain in the left ear; on May 14th he felt "sleepy" all day, with some headache and rather more earache, but managed to do his work as a carman, this proved to be his last day's work for several months. For the next four days his illness grew upon him, and on May 19th he had such an attack of shivering that his teeth chattered audibly and he vomited several times. Several other attacks of shivering, and severe and painful vomiting, complete the history up to the time of admission.

On admission he was pale, with flushed cheeks, heavy and sleepy, only anxious to be left in peace ; tongue moist and thickly furred. He complained chiefly of incessant vomiting, but also of frontal headache and pain in the back of the neck on moving his head. The left membrane showed a large perforation filled up with granulations, a little pus lay in the canal, and there was slight tenderness of the mastoid process on forcible percussion, but no redness or œdema and no pain or tenderness in the course of the jugular vein. There was no symptom of nervous disease beyond absence of the right plantar reflex. The temperature reached 104° on

the day of admission; the pulse was only 64, and remained rather slow throughout his illness, seldom exceeding 100; the bowels were loose, motions liquid and yellowish. So far, if the ear symptoms had been rather less obtrusive and such a definite history of previous rigors not been obtained, enteric fever must have been the diagnosis.

On May 26th, though he had had no rigor since admission, the temperature-range had been so large as to exclude enteric fever, two rises from normal to 104° having occurred in twenty-four hours. As the first operative step Mr. Ballance made a crucial incision into the granulations filling the perforation.

On May 27th, no relief having been obtained, Mr. Ballance completely scraped out the tympanum with a curette, most offensive granulations and thick pus being removed.

On May 28th no relief, condition worse than on admission, headache, high fever, with two or more large daily variations, profuse sweating, tremulous hands and lips, feeble voice; slight swelling and acute tenderness over the upper part of the jugular vein, with slight reddening and œdema of the mastoid process. As the next stage, Mr. Ballance opened up the mastoid antrum, and, though nothing was found, there was sufficient inducement to proceed at once, for the deeper layers of the bone were discoloured, softened, and possessed of a foul odour. Without going into surgical details, more bone was removed, and dark, offensive fluid found between the lateral sinus and the bone; the fluid was set free, the sinus opened and washed out, and the jugular vein divided between two ligatures just above the omohyoid, where the clot indicated by the swelling in the neck ended.

The immediate change speaks for itself: for the thirty-six hours succeeding the operation he was bright and cheerful, with a normal temperature and restored appetite. The subsequent history shows the hold pyæmia already had upon him; although never approaching in gravity the condition before operation, he produced a blood-stained sputum and developed pain in the right great toe-joint and an abscess in the buttock. Recovery was complete.

The occurrence of pyæmic symptoms after the operation is probably to be attributed to the unfortunate thrombosis of

so large an extent of the vein, whereby it became necessary to place the ligature low down in its course, and much already infected clot was left between the ligature and the sinus. Mr. Ballance subsequently removed this clot by opening the vein and syringing it out from the sinus.

Finally, it remains to pay attention to two classes of cases, which, like the retention cases, might suffer from indiscriminate operative interference (1) where the symptoms are not dependent on the ear disease; (2) where sinus pyæmia coexists with some less amenable complication, such as diffuse meningitis.

As regards the first class, enteric fever may provide matter for doubt. It is not uncommon for otorrhœa to appear during the course of the fever (Murchison), and this may occur with a series of rigors, as in a case recently under the care of Dr. Payne, but the chief difficulty is felt in making a diagnosis during the first few days of the fever, when thoughts of operation would be uppermost. The following case is an instance.

Case 8. *Enteric fever with ear disease.*—J. W—, æt. 22, was admitted on May 16th, 1889, under Dr. Harley.

He had had discharge from the left ear off and on for several years. Two days before admission, having been quite well up to that time, he began to shiver, and had repeated hot and cold feelings, but no actual rigor.

On admission he was suffering from severe frontal headache, aggravated by movement, and was dull and heavy, with a bright triangular flush on his cheeks; the pulse was 88, full, and soft, the temperature varied between 102° and 104°; the tongue was slightly furred and rather dry. There was a small perforation in the left membrane, and scanty offensive discharge, which had not varied for the last five weeks; no local signs about the mastoid, no pain in the ear, and no signs of disease elsewhere.

So far it might be the commencement of enteric fever or of some extension of his ear disease, but it was difficult to be more exact; as can be seen from the cases previously narrated, very little information is afforded either by the absence

of rigors or by the want of local signs, such as mastoid tenderness, redness, and œdema, for the former may not appear till the end of the first week, and the latter frequently not till much later, if at all. But two points appeared to be of use, as tending at any rate away from the complications here considered. In none of our cases has the temperature shown so small a daily variation as two degrees, in only one of twelve cases was pain in the affected ear absent at the beginning of the illness.

On May 18th, there being still no sure ground, Mr. Ballance incised the left membrane, but no pus was released. Nothing further was done, for soon afterwards a fair eruption of typhoid spots took place, enlargement of the spleen could be made out, and the rest of his illness showed no departure from the ordinary course of mild enteric fever.

Again, sinus-thrombosis with pyæmia may be due to other causes than ear disease :

Case 9. *Old disease of right ear, thrombosis of cavernous sinuses due to caries of sphenoid.*—W. W—, æt. 17, was admitted on March 30th, 1889, under Dr. Stone.

For one week before admission he had suffered from severe pain about the left temple. On admission he was very dull and sleepy, comatose at times, with a dry, brown tongue ; temperature varying between 102° and 105°. The right membrane was perforated, and a little pus lay in the outer canal. There was proptosis of the left eye, less marked of the right, œdema of both eyelids most marked on the left side, swelling of both optic discs, especially the left, and almost complete immobility of the left eye ; no sign of disease elsewhere. His nose was somewhat swollen, tense, and shiny, with a little thin discharge from it ; this condition was noted, but attracted no attention. He had had pretty severe epistaxis on the day before admission.

Thrombosis of the cavernous sinuses was clear enough, but it was attributed to the ear disease, and the combination of predominant left-sided symptoms with disease of the right ear did not at the time excite suspicion.

The autopsy revealed the condition mentioned above.

The following case is an example of the second class, viz. the not infrequent combination of complications, where diagnosis of the multiple condition is sometimes very difficult, if not impossible by symptoms alone.

Case 10. *Subdural abscess and pyæmia with basal meningitis.*—S. S—, æt. 10, was admitted on July 1st, 1888, under Dr. Ord.

She had had measles when two years old and otorrhœa off and on afterwards. Ten days before admission she was suddenly attacked with headache; her doctor diagnosed enteric fever, treated her as such throughout, and sent her up to the hospital to die twelve hours after admission.

On admission there could not be much doubt as to the condition: retracted head, stiff neck, and optic neuritis pointed to basal meningitis, and the fixed dilated pupils, divergent squint, and coma to increase of fluid in the ventricles; but owing to the absence of obtrusive signs of ear disease and the imperfection of the history first obtained, it was not suspected that the meningitis was other than tubercular in origin.

Post mortem there was found intense meningitis at the base and a considerable amount of sero-purulent fluid in the ventricles; but more interesting and unexpected was the discovery of a subdural collection of pus in the sinus groove, communicating by a round opening with the lateral sinus which contained puriform clot.

Upon subsequent inquiry it appeared probable that the symptoms had reflected the twofold pathological condition, and if the case had been admitted at an earlier period the advisability of operating would have appeared more than doubtful.

Greater difficulty is experienced, where cerebellar or temporo-sphenoidal abscess coexists with one of the pyæmic conditions, owing to the inherent latency of the former. In a case recently under the care of Dr. Stone there was at first a suspicion of pyæmia, which, however, was soon allayed by the subsidence of fever and all other symptoms; during apparent convalescence a fresh crop of symptoms, or rather

a recrudescence, occurred, which made the existence of cerebral abscess fairly certain, but sudden death took place before anything could be done to relieve it. There was found a cerebellar abscess with a subdural abscess on the roof of the tympanum, no apparent connection existing between them. In such a case if pyæmia had been pronounced, as sometimes is the case, only one element in the disease would have been found and removed, and the possibility of this must be ever present.

A CASE

OF

SIMPLE HYPERTROPHY OF THE HEART

ILLUSTRATING

FORMER AND MODERN PRACTICE.

WITH REMARKS.

By SIR RISDON BENNETT, M.D., LL.D., F.R.S.

Among my notes of practice in former years I have those relating to the case I am about to describe, accompanied by the patient's own record of the treatment to which she was subjected. Apart from the character and history of the case itself, it affords so remarkable an illustration of the revolution that has taken place in medical practice within the last forty or fifty years as to seem deserving of being recorded. I therefore offer it to the readers of the 'St. Thomas's Hospital Reports,' in response to the editor's request that I should contribute something to the new volume.

Sophia G—, who died at the age of forty-two, was an unmarried woman in humble circumstances, a dressmaker. In mental culture and character she was far above her station in life, and was well known to many kind people who took an interest in her as an industrious well-conducted Christian woman. I mention this because the details I have to give are obtained from her own record, as given in the MS. book

in my possession, and which for accuracy and truthfulness may be fully relied on. The book, indeed, seems to have been kept at the suggestion, or at all events with the knowledge, of her medical attendants, by whom, from one note, it seems to have been examined.

She did not come under my notice till towards the end of her life. She was in stature below middle height, well-formed and fairly well-nourished. Her aspect was extremely anæmic and had long been so. For twenty-seven years she had suffered greatly from breathlessness, sense of suffocation and weight on the chest. But, till within six months of her death, there had been no anasarca or other evidence of obstructed circulation. When first seen by me before making any investigation of the case evidence of enlargement and excessive impulse of the heart was manifest, and on careful physical examination it was found to be enormously enlarged, but neither the rhythm nor sounds gave any satisfactory evidence of valvular disease. The breathing was heaving and distressed, but there was no evidence of much pulmonary congestion. There was, however, general anasarca and some abdominal effusion. She gradually sank and died November 19th, 1853, about three months after my first seeing her.

On post-mortem examination the kidneys and viscera generally were found to be essentially healthy, there was effusion into the abdominal cavity, some œdema of the lungs, and general anasarca. The heart was enormously hypertrophied, extending upwards as far as the second rib. It measured over six inches from base to apex, and weighed twenty-three ounces. The thickness of the right ventricle was six eighths and that of the left seven eighths of an inch. There was no valvular disease, and the size of the orifices and of the large vessels corresponded with the size of the heart.

There was no microscopic examination of the tissues of the heart, which, however, in general aspect appeared healthy. But from the age when the record commences, fifteen years, the duration of the disease, the general nutrition of the body, and the state of the other viscera, and inasmuch as there was no history of rheumatism or other acute disease, the

enlargement was probably congenital and due to true muscular hypertrophy, with perhaps excess of connective tissue.

In size and weight it was the largest heart that in my practice I ever met with. Much larger have, indeed, been seen and recorded. But for a female heart the size was certainly remarkable, as the hypertrophy was unassociated with valvular disease or aortic obstruction, and the more so as such hypertrophy, independent of obvious cause of obstruction, is believed to be extremely rare in females. Peacock says he never met with it except in men. Taking the mean weight of the adult female heart as estimated by Bouillaud, Clendinning, Peacock and others as a little over eight ounces, in G—'s case it was nearly three times the normal weight.

The largest heart I ever remember to have met with in the male sex was that of a man whose case I have recorded in the thirty-second volume of the 'Transactions of the Royal Medical and Chirurgical Society.' This man, whose age was fifty-three, died from rupture of the aorta and hemiplegia. There was extensive atheromatous disease of the aorta occasioning transverse rupture and splitting up of the coats of the vessel, so as to produce dissecting aneurysm extending from just below the origin of the subclavian artery to the iliacs. The heart in this case weighed twenty-two and a half ounces, and the hypertrophy was evidently due to the diseased condition of the aorta, which must have occasioned considerable obstruction.

But the main purport of my paper is to record the treatment of my patient whilst under the care of some of the leading physicians of her day.

The record begins with the date of May 11th, 1826, from which time till March 5th, 1827, she was under the care of Dr. Hue,[1] by whose instructions she was bled or cupped sixty times, and had twenty-three leeches applied, the average number of bleedings per month being six, with the exception of the month of August, 1826, when there was only one bleeding. The average amount of blood lost, judging from the total recorded and from the respective amounts stated in subsequent years, was eight ounces.

[1] Dr. Hue will be remembered by many still living as one of the physicians to St. Bartholomew's Hospital.

From March 12th, 1827, she was under the care of Dr. Babington[1] till June 30th of the same year, who cupped and bled twenty-three times and applied a hundred leeches.

From July 5th, 1827, to December 1st of same year she was treated by Dr. Brown,[2] who cupped or bled twenty-seven times and applied 180 leeches.

By Dr. Davies[3] cupping and bleeding were practised twenty-four times and forty leeches were applied between the dates of December 1st, 1827, and February 27th of the following year.

Mr. Pater[4] was in charge from March 6th, 1828, till June 8th of the same year, and he bled and cupped thirty-two times and applied sixty leeches.

Dr. Clutterbuck[5] had charge for a short time only, viz. from June 17th to August 8th, but during this period the patient was cupped and bled six times and had forty leeches.

Dr. Clutterbuck was succeeded by Mr. Salmon,[6] in whose charge the patient remained till I came into the field, viz. from August 16th, 1828, till June 30th, 1853. Whilst under Mr. Salmon's care the like practice was faithfully pursued and attained its climax, for during these twenty-five years the patient was bled or cupped 791 times and had 150 leeches. The only other remedies during all these years which are recorded were blisters and setons, three of the latter and 680 of the former.

The summary of the treatment during twenty-seven years,

[1] This was the first Dr. Babington, one of the most esteemed and distinguished men of his day, in memory of whom was erected, in St. Paul's Cathedral, the beautiful statue and grateful memorial tablet.

[2] Dr. Brown was, I believe, a City practitioner, but whether connected with any hospital I am not sure.

[3] This was the father of the late Dr. Herbert Davies, who was one of the first to introduce the use of the stethoscope in England, and was the founder of the first special hospital for Diseases of the Chest in the City Road.

[4] Of this gentleman I know nothing.

[5] This was the physician who wrote on fever, which he ascribed to inflammation of the brain, and with whom against his theories I, as a young man, was bold enough to argue in the Old Medical Society when it met in the historical Bolt Court, Fleet Street.

[6] This surgeon for many years had a large home practice in the City, and was the founder of the Hospital for Fistula and Diseases of the Rectum in the City Road.

beginning when the patient was fifteen years of age and continued till she was forty-two, comes out thus :—

Cupped and bled 962 times.

Leeches 593.

Number of ounces of blood lost 9506, irrespective of what was abstracted by leeches.

Blisters in number, 680.

Setons, 3, viz.

August, 1826.

December, 1826.

September, 1827.

The bleedings appear to have been generally performed at hospital or dispensary, but sometimes and occasionally near together "at home." Looking through the whole record the operation was generally performed six times a month, sometimes seven, and in August, 1832, and January, 1833, ten times each month. In later years the intervals were longer, the average being reduced to two or three times a month, sometimes only once. Unless there is an omission of entry the last bleeding in 1852, to the amount of eight ounces, was on October 26th. The remaining dates are May 18th, 1853, May 28th, June 27th and 30th. On two of these occasions the amount of blood lost was six ounces and on the other two, eight ounces. The largest amount abstracted at any one time was twelve ounces.

So far as could be ascertained the bleedings were resorted to for the relief of the distress in the region of the heart and in the breathing, and generally at the request of the patient, who believed that by such means alone did she obtain any relief; but what other remedies were tried beyond those mentioned I know not. The medical advisers one and all pursued the same line of treatment, and from their character and professional standing we are warranted in assuming that it was the approved practice of the day, and they may be allowed at all events to point to the prolongation of the patient's life in justification of their practice.

When she came under my care her condition was such that depletory treatment seemed to me to be out of all question.

What inference, it may now be asked, are we to draw from this record? Was life really prolonged or shortened by

such treatment? Was the cardiac hypertrophy retarded or increased? Viewing the case, as we must, as one of simple cardiac hypertrophy in an otherwise healthy constitution, without obvious cause of obstruction to the circulation, it illustrates a remark of Dr. Stokes that "local disease, itself incurable, may coexist with a good state of general health for an indefinitely long period," but was his obvious conclusion observed, viz. that "when the disease cannot be cured the system at large should not be tampered with"? Such treatment would now scarcely be justified on the ground that by depletion, blisters, and setons we may arrest excessive muscular development, except at the risk of inducing worse evils, anæmia, atrophy, and general debility. But was the temporary relief afforded to the patient such as to lead us to think that life was prolonged, although the subsequent state of anæmia and debility, the apparent ultimate causes of death, were the result of the treatment? I leave my reader to answer this question as well as the equally important one what other less objectionable palliative treatment have we.

As an illustration of the extent to which depletory measures were employed in former, though comparatively recent times, this case will, I think, be considered interesting and may be made instructive. It should not be viewed merely as a "curiositas medicinæ." For there are, in my opinion, sufficient reasons for reconsidering the grounds on which we have been led to abandon so entirely the use of the lancet in medical practice.

Experience as well as the advancement of pathological science may justify the conclusion at which we have arrived, that inflammatory action is not to be controlled by venesection, but it does not follow that life may not be directly saved, or the course of the disease materially modified, by the relief afforded by such means, at certain stages, or in certain conditions of the system, or characters of the constitution. There are forms both of acute pneumonia and pleurisy occurring in patients of robust constitution, which in certain conditions and stages of the diseases are relieved by the abstraction of blood, more immediately than by any other remedy, so as to ward off immediate danger to life, and admit of the inflammation running its course in more

favorable conditions—and this though stimulants or other remedies may be demanded, as the basis of treatment, even from an early stage of the disease. Even the amount and persistence of pain may add not a little to the immediate gravity of a case of acute inflammation and may be more immediately relieved by depletion, whether local or general, than by an other equally available agent. Nor is there any sufficient ground for believing that either through the immediate influence on the action of the heart and arteries or impoverishing of the blood the tendency to serous effusion or exhaustion of the vital powers is seriously augmented if due care be taken in the employment of other means. There is the greatest difference between attempting to cure the disease by blood-letting and obviating certain dangers, or palliating certain symptoms. "To avoid immediate danger and obviate the tendency to death" used to be an old-fashioned therapeutic rule.

In the present day there is much reason to believe that practice based on experience is too frequently made to give place to rules based on theories derived from pathological data, whether supported or not by experience. No doubt the number of competent and careful observant practitioners in the present day is largely increased, and so far as altered views of treatment are based on the experience of such men there is not a word to be said against them. But although we may not be, like our predecessors, shackled and bound by theories and systems of medicine, we are not exempt from the bias exercised by our more extended and more accurate physiological and pathological knowledge, when at the bedside we are called to apply our scientific acquirements to the great purpose of our art, the relief and cure of disease. That in a large number of instances, both of inflammatory and other diseases, where depletion was formerly practised, experience and science have alike shown that it is not merely useless but highly prejudicial, cannot be doubted; nor in order to account for this is it necessary to have recourse to the theory of change of type of diseases. But it does not therefore follow that we should disregard or undervalue what Sydenham says of epidemic as well as of individual constitutions.

As regards the simpler forms of chronic cardiac disease I

will leave the case I record to speak for itself; and as regards those which are complicated with valvular or other causes of obstructed circulation, they are so different in character, involving various changes in the lungs and other organs, that it would be difficult and indeed impossible in a brief communication like this to attempt to discuss them. But that in many cases the local abstraction of blood will often afford us valuable aid in their management I have no doubt.

In acute pericarditis, occurring as it does in very various vital conditions of the system at large as well as of the heart itself, keeping these considerations in view, I have no doubt that local depletion in the early stages often gives signal relief to the pericardial distress and exercises a beneficial regulating influence on the contraction and rhythm of the heart, thus affording opportunity for the controlling action of wine or the use of other agents.

Fifty years ago if a man fell down in the street from a fit of any kind whatever, and a medical man was called to his assistance, he was pretty sure to meet with the indignant reproof of the bystanders if he did not immediately produce his lancet and bleed the patient. The advance of cerebral pathology has taught us that in numerous instances such practice is unjustifiable and would often be fatal. But here again the question of venesection in head affections in apoplectic or paralytic seizures opens too wide a field to admit of our entering on it. Meeting, however, as we do, not infrequently, with cases of severe headache and sense of fulness, with other indications of cerebral congestion, which nature relieves by epistaxis or hæmorrhoidal bleeding, can we hesitate in concluding that venesection or cupping would often be appropriate remedies? I admit that my experience tells me that free purging will often relieve such cases, and that smart purging has more efficacy in determining from the head than from the lungs, and may be more often and more safely had recourse to in the former than in the latter case, I feel very strongly that the whole subject of bleeding as a therapeutic agent demands new and careful investigation, especially from a clinical point of view, and I venture in conclusion to express my conviction that in the therapeutics of the present day depletory remedies are too much neglected

and that students ought not to be allowed to enter on practice knowing nothing of the value and use of the lancet, probably not even possessing one.

Reviewing the vast progress that medical science has made during the last fifty years we cannot doubt that still further advances will be made, and by which our practice will inevitably be influenced. But the time is yet distant when the treatment of particular cases must not be determined by experience and sound judgment rather than by any other considerations. Nor will the recorded experience of the past cease to be more or less available for a succeeding age. Science will always be essential for the due discharge of our duties, but experience will long, if not always, remain the surest basis of therapeutics. Science will often enough teach us why our treatment has failed, but not always why it has succeeded. The very nature of man's constitution is such that the same influences operate very differently in different cases, and he who is unmindful of this and fails to appreciate the individual features of each patient's case will not prove a very successful practitioner. Doubtless it is much to have discovered the cause of disease, but alas! too often the cure has yet to be sought, though it is to be feared that, even in the present day, we are not altogether free from the reproach of the ancient orator—

"Medici, causâ morbi inventâ, curationem inventam putant."

CASE OF EXCISION OF THE RECTUM.

By WILLIAM F. HASLAM, F.R.C.S.,
ASSISTANT SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.

E. G—, æt. 20, railway porter, admitted June 11th, 1888. His family history was good and there was no history or suspicion of syphilis. He appears to have been quite healthy until twelve months before admission. At that time, while straining at stool one day, he felt a cutting pain in the lower part of his back; this lasted for about two days, when it was relieved by a suppository. A month after this the pain returned, but he was able to go on with his work for another month, by which time he had symptoms indicative of serious mischief in the bowel, viz. diminution in the size of the motions, diarrhœa alternating with constipation, pain in the rectum especially on defæcation, and he was passing some blood and matter. For these symptoms he was under treatment, but not obtaining any relief he applied at the General Hospital, Birmingham, on June 11th, 1888, and was at once admitted under the care of Mr. Bartleet.

On examining the rectum we found that the anal end was surrounded by a hard craggy growth, having an aperture just large enough to admit the index finger, which could be passed through into healthy bowel above. There was some ulceration, but the growth did not seem to be attached to the deeper parts, and owing to its limitation appeared to be suitable for removal. The pain on defæcation or examination was most intense, so much so that it was necessary to administer an anæsthetic to satisfactorily examine the bowel.

He was passing a muco-purulent discharge tinged with blood, and had diarrhœa; he was anæmic and had lost flesh.

On June 22nd Mr. Bartleet performed a left lumbar colotomy as a preliminary step to excision, the bowel was stitched to the wound but not opened.

25th.—Colon opened.

28th.—Two stitches removed.

30th.—Remaining stitches removed, wound looking healthy, bowels acting well. At times fæces came through the rectum as well as the side.

July 20th.—Since last report has been progressing favorably, eating and sleeping well, and has been free from pain; the artificial anus is acting well. Soon after this Mr. Bartleet left for his annual holiday and kindly handed the case over to my care, for which I am much indebted to him.

August 1st.—On examining the rectum we found that there had been a slight increase in the growth, and that there was some induration reaching up the bowel on its left lateral aspect.

3rd.—I excised the rectum by passing a curved bistoury through the anus, perforating just in front of the coccyx, and completely dividing the posterior wall of the gut. A curved incision was next made round the anus, and the attachments of the bowel were separated with scissors, a catheter having been passed to indicate the position of the urethra. Attempts were next made to cut through the bowel above the growth by means of an écraseur, but they were unsuccessful owing first to the breaking of the wire and next to the bending of the instrument; finally curved scissors were used and rather more than two inches of the whole circumference of the bowel were removed. A small indurated mass was felt at the left lateral aspect, but owing to the profound shock from which the patient was suffering this could not be removed, as it was considered undesirable to prolong the operation. There was considerable hæmorrhage during the early stages of the operation, but this soon diminished. The wound was dusted with iodoform and plugged with oiled lint.

The shock due to the operation lasted for some days and was most severe; indeed it was a week before there was any marked improvement, but from that time he gradually

gained strength. The after-treatment of the wound was based on principles of surgical cleanliness. This was obtained by the free use of iodoform and frequent syringing with antiseptic solutions.

31st.—Transferred to the Jaffray Suburban Branch Hospital. For a time now he did not improve at all; some thickening could be felt at the upper part of the wound and occasionally pus was discharged from the artificial anus as well as from the wound. This in time diminished, and by the beginning of October he was able to get up, and on the 23rd returned home.

Nothing further was heard of him until April 15th, 1889, when he was admitted unto the General Hospital to have a pad for the artificial anus. He had gained flesh and was looking well, there was no pain in the rectum, unless fæces passed through as they do from time to time. In the position of the anus there was a funnel-shaped opening of cicatricial tissue which would just admit the tip of the index finger, but it was impossible to explore the bowel beyond this; healing was incomplete over a small part on the dorsal aspect.

June 28th.—His condition was as follows:—No motion has passed through the rectum for a month or six weeks. For the last week there has been a sharp cutting pain in the rectum and on passing water. There is still some discharge from the bowel. Has gained 3 lbs. during the last ten weeks. The artificial anus is acting well.

He was seen on October 4th. The funnel-shaped cicatrix had contracted since last examination and would not permit the passage of a No. 9 metal bougie. There was still a small patch of granulation-tissue at the left dorsal aspect, but this was soft to the touch and looked healthy; there was a slight discharge from this. No motions have passed this way since the last report. He has at times pain in the rectum and on passing water, but this is not constant. His appetite was good; he felt strong and could walk about all day. No enlargement of the pelvic glands or liver was detected.

The growth was examined by Dr. Crooke, at that time pathologist to the hospital, and he reported as follows:—"It is situated chiefly in the mucosa, which is much thickened.

It consists of racemose groups of acini whose general direction is vertically downwards towards the muscular layer. The acini are small, rounded, and lined with cells, which are very vesicular and lined with mucus; the nuclei are frequently crescentic in outline and pushed to one side of the cell. The stroma consists of thickened longitudinal bands of dense fibroid tissue, sparsely nucleated, and from these bands a delicate reticulated fibrous stroma is given off, penetrating between the acini. The growth is not confined to the mucous and submucous coats, but is seen penetrating between the bands of muscular fibres of both the inner and outer muscular coats, and even to the outer fibro-cellular connective tissue. Although locally malignant, still, when compared with a typical columnar epithelioma of the rectum with metastases in the liver, which I have before me, it differs considerably in the small size of the acini, in the characters of the cells, which are more or less typical of the normal cells lining the follicles of the rectum, and not a-typical and intensely proliferative as in the columnar-celled growth; lastly, the stroma is far less richly cellular and more fibrous in character."

Remarks.—The character and intensity of the symptoms pointed to this being a case of malignant disease of the rectum, and a digital examination certainly confirmed this opinion. Here, indeed, was a group of symptoms that are considered pathognomonic of that condition,—diminution in the size of the motions, a muco-purulent diarrhœa, the presence of blood, pain in defæcation or examination, and loss of flesh. On reviewing the early symptoms we are struck by the sudden onset of them, the first being a severe cutting pain in the lower part of the back while straining at stool; and though this passed off for a time it soon recurred and was accompanied by others of more significance. It may be that this adenomatous infiltration had been gradually forming, and that commencing ulceration caused the pain, and was followed by an increase of growth and the development of further symptoms. Dr. Crooke's report of the growth would favour this idea, for its characters are not those of a true columnar-celled epithelioma, but are rather adenomatous.

Had removal not been effected there is but little doubt that the growth would soon have taken on malignant cha-

racters, for there were already evidences of its spreading through the wall of the intestine, and in places there was considerable small-celled infiltration. Moreover, as fourteen months have passed and there is no sign of recurrence, its adenomatous characters are again emphasised. Obviously however, this patient cannot yet be regarded as cured, but there can be no question that by a colotomy and an excision his life has already been considerably prolonged, and a condition of intense suffering has been exchanged for one of comfort.

The treatment of rectal growths has of late years attracted much attention; this is due partly to the earlier recognition of structural disease in this region (by a freer use of the finger as a means of diagnosis than was formerly practised), and to the fact that with an improved method of wound treatment, healing here, even of a large surface, can be obtained with but little risk of the dangers incident to septic absorption. Looking at the results obtained from a colotomy without excision, it is no wonder that surgeons began to consider the possibility of removing the disease by the knife as was done in other regions. But for this procedure to be followed by success it is necessary to make a careful selection of cases. The growth must be well free of the peritoneum, there must be an absence of adhesions to neighbouring parts, the finger should be able to feel healthy bowel above. Further, as complete excision entails considerable shock, the general condition of the patient must be sufficiently good to enable this procedure to be safely undertaken.

If excision is undertaken it can be done either without a preliminary colotomy, or after one has been performed. But for many reasons it seems desirable to divert by a colotomy the fæcal discharge before completely excising the rectum. The passage of fæces over a wound must favour decomposition and be a source of danger. Moreover, as healing proceeds, cicatricial contraction is sure to take place and will in time be a cause of obstruction. It has been suggested that this may be prevented by the passage of bougies, but surely this is an undesirable proceeding over ground lately occupied by malignant or even semi-malignant growth; complete rest

to the parts is essential to minimise the risk of recurrence. Then again with a well-performed colotomy patients have a considerable amount of control over their motions, while after excision alone there may be difficulty in this respect. If a preliminary colotomy is done one of three methods may be adopted: 1, the lumbar operation; 2, the anterior or sigmoidal colotomy; 3, the complete division of the bowel through an anterior incision, with a careful sewing up and replacement in the peritoneal cavity of the lower end, the upper being attached to the wound to form an artificial anus, as recommended by Madelung. This operation has advantages that cannot always be obtained by either of the others. The fæcal current is completely diverted, the lower end of the bowel is then of no further use and consequently must undergo atrophy, the diminished blood-supply will tend to starve the growth and will diminish hæmorrhage when removal is undertaken. Finally a word as to the *technique* of excision. This should be performed as quickly as is consistent with thorough removal of all diseased parts, and in the above case the method adopted by Harrison Cripps was followed. I see by a recent paper of his that he now prefers curved scissors to the écraseur for cutting through the bowel, and my experience of the écraseur was such as to forcibly impress me with the advantages of scissors.

DERMOID CYSTS IN THE FLOOR OF THE MOUTH AND IN THE NECK.

By HENRY BETHAM ROBINSON, B.S., F.R.C.S.,

Dermoid tumours occurring in the neck and floor of the mouth had, up to quite recently, been considered pathological rarities. Now that our attention has been drawn to them we find many tumours to place in this group.

The term "dermoid" may be affixed to cysts, mixed tumours, and adenomata. It implies that the tumour is a derivative from certain fœtal structures which have been embedded in the parts around.

The fœtal structures that give rise to "dermoids" are embedded portions of epiblast or hypoblast. The epiblast may be included at any spot on the surface of the embryo where a cleft exists. The common situations for this to happen are at the outer angle of the orbit, and in relation with the visceral clefts. More rarely it occurs at some spot in the median line.

The hypoblast becomes included in connection with the various diverticula from the primitive gut to form the thyroid, post-anal gut, &c. These diverticula are tubular, and the connecting tubes, after the formation of the gland, &c., usually become "obsolete."[1] If this does not happen, the persistent portions of the embryonic rudiment may give rise to "dermoid tumours."

Dermoid tumours, it must, however, be remembered,

[1] Bland Sutton, 'Lectures on Evolution in Pathology.'

although congenital in a pathological sense, are clinically often not so. A large number of these tumours are not noticed until some time after birth, a few appearing very late.

In this paper only one branch of the "dermoids" will be spoken of, the cystic tumours limited to the region of the floor of the mouth and neck.

These dermoid cysts may originate:

(1) From epiblast included in the mid-line of the body by the invagination of the stomodæum and by the junction of the visceral arches.

(2) In the lines of the visceral clefts.

The visceral clefts are the passages which in early embryonic life pass from the exterior into the foregut. The surface epiblast joins in the clefts with the hypoblast lining the foregut.

(3) From the ductus thyreo-glossus.

His[1] has described a canal running from the foramen cæcum through the tongue between the genio-hyo-glossi muscles to the posterior surface of the hyoid bone. This he terms the lingual duct. This duct he has shown to be continuous with another canal, the thyroid duct, which runs from behind the hyoid bone down to the isthmus of the thyroid body. These two canals together form the ductus thyreo-glossus.

The lingual duct may be often found to be patent and capable of being dissected out between the genio-hyo-glossi, but the thyroid portion usually aborts. In its original position there is often to be met with a process running down to the isthmus of the thyroid body from the hyoid bone,—"processus pyramidalis," or, if surrounded by muscle, this is termed the "levator glandulæ thyroideæ."

It has been considered by Strecheisen that the ductus thyreo-glossus of His corresponds to the hypo-pharyngeal diverticulum. This is an outgrowth from the ventral wall of the foregut which passes down in the middle line to form the thyroid body. He says that the foramen cæcum indicates the spot at which the diverticulum left the foregut. It is known that the junction of the stomodæum and the foregut occurs at the fauces, so it seems highly probable that

[1] 'Anat. Mensch. Embryonen,' Bd. iii, 1885.

Strecheisen is right in his conclusion and that the foramen cæcum and the duct below do correspond with the hypopharyngeal diverticulum.

An argument that has been raised against this is that the lingual part of the duct has been shown to have a lining membrane corresponding to that of the buccal cavity which is formed from the stomodæum, an epiblastic involution, whereas if it were derived from the foregut it should be lined with cubical or columnar epithelium. It has been proved that it is not unusual for a columnar epithelium to change into a stratified one, so it must be considered that such a conversion has taken place. What is more, we know that the neighbouring pharynx, originally lined with columnar epithelium, undergoes a similar change.

Dermoid cysts show considerable variation in their lining membrane and in their contents. Most of them have a lining membrane resembling skin with hairs and large sebaceous glands and contain simply a mass of sebaceous matter and free epithelial cells or sebaceous matter mixed with a mucoid fluid, sometimes in the form of small pellets. A considerable proportion, however, appear to be quite smooth and rather shiny on the surface without any trace of hairs. The smooth-lined cyts as a rule contain a dirty brownish mucoid fluid without any sebaceous matter floating in it.

The cases described in this paper will be divided into two groups:

Group A. Those cysts situated laterally.
Group B. Those situated in the median line.

Group A.—The cysts situated laterally owe their origin to included embryonic rudiments in the line of the visceral clefts. They are generally met with either in close connection with the hyoid bone, and so are situated between that structure and the lower jaw, or in the line of the lowest cleft at the anterior border of the sterno-mastoid muscles and just above the sternoclavicular articulation.

These cysts are usually regarded as derived from epiblast, but there is a probability that the hypoblast in the cleft may be a basis for some of them. Those that have smooth walls, show no hairs, and have simply mucoid fluid are possibly

hypoblastic in origin. The only means of determining this is by careful microscopical examination of the walls of these tumours. Should a lining of cubical or columnar epithelium be found, then their origin from hypoblast would be proved.

The cysts formed from the upper clefts, from their close association to the tongue, have been named "lingual dermoids."

Some of these appear at first more toward the middle line, but, as they increase in size, they tend to extend outwards to the angle of the jaw. Their relation to the genio-hyo-glossus muscle, on dissection, will prove from which structure they originate. If they are to the outer side of this muscle and between it and the mylo-hyoid, they may be regarded as derived from a visceral cleft; if they are between the genio-hyo-glossi muscles, then the cysts have been formed in connection with the ductus thyreo-glossus.

Case 1. *Cyst on left side between mylo-hyoid and genio-hyo-glossus muscles.*—Joseph J—, æt. 27, was admitted under the care of Mr. Mackellar on March 4th, 1889.

Ten months before a small swelling was noticed in the floor of the mouth towards the middle line. It was soft at first, but, as it increased in size, it appeared to get harder, and to extend to the left side. The swelling was painless.

On admission the floor of the mouth on the left side was seen to be a little raised, the swelling extending from just external to the frænum to the angle of the jaw. Below the jaw there was a distinct tumour filling up the interval between it and the hyoid bone. This tumour was tense and fluctuating; fluctuation could be elicited from the outside to the floor of the mouth. The mucous membrane of the floor of the mouth was normal, not thinned nor translucent. Wharton's duct could be made out stretched over the tumour, and saliva could be seen flowing freely from its orifice. The movements of the tongue were very little interfered with.

The tumour was removed from the outside by an incision made midway between the lower jaw and the hyoid bone. On dividing the mylo-hyoid muscle, a large loculated cyst was exposed resting on the left genio-hyo-glossus and pro-

jecting toward the floor of the mouth with the mucous membrane stretched over it. The cyst wall was closely adherent to surrounding structures, which made removal rather difficult.

The cyst contained sebaceous matter mixed up with a brownish gummy fluid. The cyst wall was thin; in some parts it was dull and appeared like skin, in other parts shiny and resembled a mucous lining. There were no hairs to be detected with the naked eye.

Histologically there was seen a stratified epithelium lining the cyst wall with a few glands in the sub-epithelial tissue; no hairs could be discovered. The specimen resembled a section of the pharynx; in no spot was it like true skin.

Case 2. *Cyst on right side between mylo-hyoid and genio-hyo-glossus muscles.*—William O—, æt. 45, was admitted under the care of Mr. Clutton in September, 1888.

Ten years or more before admission the patient had noticed a small lump below the right side of the lower jaw about the level of the second incisor tooth. The swelling steadily increased in size without any pain and without any diminution from time to time.

When examined, there was a fluctuating swelling on the right side extending from the angle of the jaw to about one inch beyond the middle line and below to the level of the upper part of the thyroid cartilage; the tumour measured five by three inches. The skin over it was quite free, and the swelling seemed to be bound down by the deep fascia. There was slight bulging of the floor of the mouth on the right side, but there was no transparency or thinning of the mucous membrane.

On tapping the cyst some glairy fluid was obtained with a large amount of loose epithelium.

The cyst was afterwards removed from the outside and found to be situated between the mylo-hyoid and genio-hyo-glossus muscles. It was closely attached to the body of the hyoid bone and adherent to parts around.

The cyst wall appeared like ill-developed skin, but no hairs could be detected. The contents were a large quantity of a brown glairy fluid in which floated small round bodies about

the size of a rape seed; these proved microscopically to be made up of fatty material with loose epithelium.

Case 3. *Cyst in right mylo-hyoid region; a second cyst in the middle line.*—William T—, æt. 14, admitted February 17th, 1888.

Since birth there had been noticed two swellings in the region of the chin. Both had been painless.

On admission there was a round swelling over the symphysis of the lower jaw, rather movable, and about the size of a walnut. The skin was quite free over it.

In the floor of the mouth beneath the tongue was another swelling which fluctuated; this was more prominent on the right side so that the tongue was put out to the left. The openings of Wharton's ducts could be seen distinctly. The swelling projected below the jaw in the mylo-hyoid region.

This cyst, when dissected out, was a smooth-lined cyst containing a clear gummy fluid.

The cyst on the chin was lodged in a depression on the symphysis: it contained sebaceous matter and hairs.

This case is a very unusual one from the presence of two congenital cysts. The cyst on the chin was probably due to inclusion of epiblast in the median line; the other cyst originated in the line of a visceral cleft.

The cases above described are often spoken of as "lingual dermoids." In their diagnosis there is often some confusion made between them and ranulæ.

Differential diagnosis.

Ranulæ.	*Lingual dermoids.*
1. Generally rapid in formation; often due to an injury.	Slow in development; congenital in origin.
2. Marked projection under the tongue and very little below jaw.	Project very little into floor of mouth but well marked under the jaw.
3. Mucous membrane of floor of mouth transparent.	Mucous membrane normal.

4. Fluctuation easily obtained.	Fluctuation often indistinct owing to tension of cyst.
5. If tapped, clear glairy fluid escapes.	If tapped, sebaceous matter or a dirty brown mucoid fluid obtained.
6. Treatment by seton, drainage, &c., generally effectual.	Any treatment short of eradicating the cyst wall futile.

Among the cysts found at the side of the neck and derived from the visceral clefts must be included "branchial fistulæ."

These "branchial fistulæ" are commonly met with in relation with the lowest branchial cleft, the cleft in front of the sterno-mastoid muscle. Their opening is usually about one inch to an inch and a half above the sterno-clavicular articulation and, I believe, are more often found on the right side.

A "fistula" may exist as a mere sinus which gets in relation with the carotid sheath and runs up on that structure to the neighbourhood of the hyoid bone, or it may take the form of a small channel, scarcely admitting a probe, which is connected with a cystic swelling in the deeper tissues, the latter proving, on examination, to be a "dermoid."

Case 4. *Fistula with cyst attached.*—A. M. W—, æt. 1, was brought up to the hospital with a small cystic swelling over the anterior margin of the right sterno-mastoid muscle and about one inch above the sterno-clavicular articulation, which had been noticed since birth.

Over the swelling is a small foramen admitting a very fine probe. From the foramen a whitish oily fluid escaped on pressure.

The cyst was freely movable in the surrounding tissues and not connected with the skin except at the foramen.

The fistula and cyst were removed in one piece; the contents consisted of a whitish glairy fluid with a quantity of loose epithelium floating in it.

On microscopical examination of sections made through the sinus and the cyst, the epidermis from the surface may

be traced down the sinus into the cyst. Here papillæ are lost, and the epithelium, although still stratified, is much looser and composed of larger cells. No hairs can be detected in the wall of the cyst. At a point most distant from the entrance of the sinus there is to be seen a diverticulum from the cyst. A distinct change has now taken place in its lining membrane. The stratified epithelium has been replaced by a columnar epithelium, below which is a large amount of lymphoid tissue. This, in places, is seen forming "solitary glands," as are met with in the intestinal walls.

Now, the appearance of this columnar epithelium with lymphoid tissue gives the cyst wall a marked likeness to intestinal mucous membrane. It is evident that the columnar epithelium cannot have been derived from epiblast, and, from its appearance at the deepest part of the cyst, which would correspond to the innermost portion of a branchial cleft, I venture to think that the only explanation is that it is of hypoblastic origin and it has arisen from the hypoblast lining the cleft.

Case 5. *Branchial fistula with cyst attached.*—Florence K—, æt. 7, was admitted on August 23rd, 1888, under the care of Mr. Makins. She had had a small lump in the front of her neck all her life.

On admission there was a small swelling freely movable in the deep tissues and free from the skin, except at one spot, where there was a fistulous opening, situated at the anterior margin of the right sterno-mastoid muscle and about one inch above the sterno-clavicular articulation. There was connected with the cyst above a cord-like piece which ran up in the line of the sterno-mastoid for about two inches and a half. The swelling distinctly fluctuated.

On August 28th the cystic swelling was removed with the sinus attached. The cord-like process was found to have a very close association with the carotid sheath, upon which it ran upwards for the distance stated before.

The contents of the cyst were sebaceous and its lining appeared like normal skin.

Case 6.—*Branchial fistula with cyst attached.*—George B—, æt. 18, was admitted into hospital July 11th, 1889. He

had noticed a small swelling on the right side of his neck as long as he could remember, which varied in size with the flow of a watery fluid from a small hole.

On admission there was, about one and a half inches above the right sterno-clavicular articulation and at the inner margin of the sterno-mastoid, a small fistulous opening admitting a very fine probe. Connected with the opening was a fluctuating swelling which reached up to the hyoid bone in the line of the carotid sheath. From the fistula a brownish watery fluid escaped.

The case, through the kindness of Mr. Mackellar, was placed under my care. On July 12th I removed the cyst with the opening in the skin. There was a sinus one third of an inch in length between the opening and the cyst. The cyst had to be dissected off the front of the carotid sheath as far as the hyoid bone: above this point it became only a thin strip of tissue which passed in deeply among the structures about the great cornu of the hyoid bone. Complete dissection of this was impossible so it was tied with thin silk and cut off. The wound healed by first intention; no drainage was used.

The cyst contained a thin, dirty, purulent fluid. On microscopical examination of the cyst wall the epidermis could be traced from the fistula into the cyst, but the lining membrane had become converted into a thickened layer of granulation-tissue and so no knowledge could be gained as to its origin, whether from epiblast or hypoblast.

Group B.—The cysts situated in the median line may be due to included epiblast in the middle line of the body by the invagination of the stomodæum and by the junction of the branchial arches (*vide* Case 3) or from the ductus thyreoglossus. These cysts may be met with above or below the hyoid bone.

Those found above the hyoid bone are situated between the genio-hyo-glossi muscles and are beneath the tongue. They may be superficially placed, or deep in the substance of the tongue. They have usually smooth walls and contain a brownish glairy fluid. Cysts with sebaceous contents in the substance of the tongue are rare.

The cysts met with below the hyoid bone are more common than those above in the median line. They are deeply placed, in close contact with the larynx and trachea and move with deglutition. They are usually small, tense, and hard and have the muscles passing to the sternum stretched over them. Their commonest position is over the thyro-hyoid membrane; thus they are difficult to diagnose from bursal cysts arising in this situation. The chief stress in diagnosis should be laid upon the length of time the swelling has existed, and the only actual proof is a careful examination of the walls of these cysts.

Case 7. *Dermoid cyst in mylo-hyoid region.*—Wm. N—, æt. 24, was admitted into the hospital in June, 1888, under the care of Mr. Pitts. Six years before he had noticed a tumour below the jaw which was painless. This gradually increased in size, but for some time before admission its growth had become stationary.

On examination there was a swelling about the size of a tangerine orange situated in the middle line above the hyoid bone. The skin was freely movable over it. On removal it was found to be situated superficially. The cyst contained sebaceous matter and hairs.

This cyst, which showed a lining membrane like skin and had hairs in it, was undoubtedly derived from epiblast and possibly in relation with the stomodæum.

Case 8. *Cyst in thyro-hyoid space.*—Arthur W—, æt. 19, was admitted into the hospital August 20th, 1887, under the care of Mr. Pitts. Since birth there had been noticed a swelling in the middle line of the neck. This had increased during the last twelve months to the size of a hen's egg.

On admission there was a rounded, tense, fluctuating swelling over the thyro-hyoid space. It was painless. The skin was freely movable over it and the tumour moved with deglutition. On removal it was found to be deeply placed on the membrane with the muscles stretched over it.

It proved on examination to be a "dermoid."

Case 9. *Cyst over the thyro-hyoid membrane.*—Sister M—, æt. 26, was admitted under the care of Mr. Pitts on September

13th, 1889. A lump in the neck was first noticed six months before admission; not painful. For the last two months it had seemed to get a little larger and gave the patient a feeling of constriction.

On examination there was found a circumscribed swelling about the size of a walnut just above the thyroid cartilage. The skin was free over it and the cyst moved with deglutition.

On September 17th the cyst was removed; it was found to be exactly in the middle line on the thyro-hyoid membrane with the sternal muscles stretched over it. The cyst was tense and it burst during dissection, setting free a brownish mucoid fluid. A process from the upper part of the cyst ran up to the back of the hyoid bone. The cyst wall was thin and its lining membrane smooth; it did not show any skin elements to the naked eye.

It is very probable, from the presence of the process running up from the cyst to the back of the hyoid bone, that it developed in connection with the ductus thyreo-glossus.

Case 10. *Cyst on thyro-hyoid membrane.*—Alfred E—, æt. 11, admitted September 12th, 1889, under the care of Mr. Pitts. He had had the swelling in the neck since birth. In the median line of the neck over the thyro-hyoid space was a fluctuating swelling about the size of a walnut moving with deglutition. The skin was quite free over it and it was painless.

On September 15th the cyst was removed. The muscles going to the sternum were stretched over it. The cyst burst during dissection and a brown mucoid fluid escaped. In connection with the cyst below was some tissue like that of the thyroid which ran down over the thyroid cartilage to the isthmus. The cyst wall was thin and showed no signs of hairs. This cyst was probably formed in connection with the ductus thyreo-glossus.

In conclusion I must tender my thanks to the surgeons of the cases described above for their kindness in allowing me to make use of the notes.

NOTE ON THE USE

OF

UNNA'S DRESSING IN CASES OF ULCER OF THE LEG.

By G. H. MAKINS.

On looking over my cases in the out-patient room, it occurred to me that a short account of the treatment of chronic ulcers of the leg by Unna's paste might be of some interest to the readers of the reports; for in spite of the numerous methods of treatment at our disposal, it can scarcely be said that satisfactory results in all particulars are to be obtained with certainty in patients who are of necessity treated as ambulants.

I am indebted for details as to the method of application to an article in the 'British Medical Journal' of February 4th, 1888, by Dr. Philippi, of the German Hospital, Dalston.

The mass is prepared in the following manner:

℞ Zinci Oxyd. 5 parts;
Gelatine, 5 parts;
Distilled water, 6 parts;
Glycerine, 8 parts;
by weight.

The gelatine is dissolved in the water and glycerine by the application of gentle heat, the oxide of zinc is made into a paste with a little water added to the liquid gelatine and well stirred up. The fluid is then poured on to a glass

slab and left to cool in thin cakes, which may be broken up into pieces of a convenient size and preserved for use.

When required for dressings it should be heated over a water-bath, and for this purpose I have found an ordinary glue-pot extremely serviceable.

The mode of application of a dressing is as follows: The leg is first thoroughly cleansed by washing with a solution of mercuric chloride (1—1000), in order as far as possible to asepticise the wound surface as well as the surrounding skin about to be enclosed beneath the dressing. The leg is now enveloped by a couple of thicknesses of an ordinary carbolic gauze roller, and the wound surface and half the remaining circumference of the leg brushed over with the melted zinc mass. In large ulcers the whole circumference should be thus treated. Fresh turns of the roller are now made and fresh applications of the paste at intervals until a thickness of about three sixteenths of an inch is attained. In this manner an occlusive dressing is applied which needs renewal at the end of the week, or in some cases, if the discharge be abundant, at the end of three or four days. If the dressing be untouched for a week the wound of course becomes foul, but as this is usually the case with any other form of ambulatory treatment, and as the patient is in great measure protected from absorption by the presence of a granulatory surface, it cannot be considered a matter of very great moment.

For illustration of the results to be obtained by the method I have collected the cases in which it has been successfully applied in my department since January, 1889. These cases are twenty-three in number, and in my opinion offer highly satisfactory results. During the same period I only find three cases in which the treatment had to be abandoned as useless or hurtful. Experience shows, however, that the cases need selection and that the method is not equally applicable to all varieties.

Of the twenty-three cases, fifteen were males, six females, two children. Ten were examples of typical varicose ulcer, three were traumatic ulcers occurring in patients with varicose veins, ten were simple in character, and in three cases there was a distinct history of previous syphilis, but in neither did

the wound present the characters of breaking down gumma. During the local treatment 13 took a mixture of iron and magnesia; 7, sulphate and carbonate of magnesia; 1, iodide of potassium; 1, colchicum mixture; and 1, a child, steel wine and cod-liver oil. The duration of ulceration varied between one day and several years, and the extent of the sores from large irregular surfaces four and half inches by two and half inches to small circular ulcers one inch in diameter. The average duration of treatment was about seven weeks, with extremes of fourteen days and three months, and the average number of dressings about six and a half, in one or two of the cases the dressing being made twice weekly.

Application of the dressing causes a rapid change in the appearance of the ulcer. The edges, if loose or undermined, adhere at once, the granulations rising in the centre and exhibiting marks corresponding to the texture of the bandage; meanwhile the equable pressure tends to cause absorption of inflammatory thickening of the surrounding area. In many cases the discharge neither leaks out nor saturates the dressing for some days; should it do so the dressing needs renewal, but with out-patients this is often impracticable, so that I have found it better to supply them with an alternative dressing with directions to cut off the Unna should it become offensive. This is needful, however, in but a small proportion of the cases, if those in which discharge is extremely abundant are excluded from the treatment.

As far as the experience gained by these cases, in addition to a number treated casually during the previous years, goes, the following classes would seem particularly suited to the method of treatment. Simple traumatic ulcers; ulcers resulting from inflammation with loss of substance as may follow abscess or cellulitis; simple ulcers; varicose ulcers of either variety, especially those directly following rupture; ulcers due or complicated by chronic eczema; and ulcers on the legs of young patients, especially young girls. Unfavorable results, chiefly negative in character, were observed in a few other cases; these were most marked in instances of rapid progressive ulceration with profuse discharge, in cases of great irritability, and in well-marked tertiary syphilitic ulcers. As far as my experience of the latter class goes,

Unna's method is decidedly inferior to that by the local application of mercurial ointments or lotions. I must further state that the method failed entirely in two cases in which a good result would have been peculiarly gratifying, one of double encircling ulcer of both legs, and one of chronic ulcer of one leg, the other having been amputated for a similar condition. In one instance only have I noticed steady increase of ulceration, this was in a young male patient with multiple ulcers connected with no distinct constitutional condition, situated on the feet and around the ankles.

From the consideration of the above it will be noted that Unna's method is especially successful in those classes of case in which other simple methods commonly succeed, but, nevertheless, it seems to me to offer several distinct advantages which I will shortly enumerate. Its mode of action is theoretically perfect. It supports the sore evenly throughout its whole surface, besides giving ample support to the limb both above and below; and this support is not only equable, but also soft and elastic, in all these particulars comparing favorably with that obtained by using strapping or a sheet of lead, which may act as actual mechanical irritants. It forms in fact an artificial skin of a soft pliable nature, an immense advantage to a man or woman obliged to do manual or household work during treatment. An attempt is made, moreover, to asepticise the wound, and if the dressing is applied sufficiently frequently this might be a successful one under more favorable conditions than those offered by out-patient practice. The moderate absorbent qualities of the application together with the feeble antiseptic action of the oxide of zinc are also advantageous. In this particular it is preferable to the elastic bandage, which often gives trouble by arresting transpiration. Another very great advantage lies in the unfrequent change of dressing: the patient is relieved of the care of the ulcer, and the worry of a dressing which, in the moist varieties, unless frequently renewed dries and adheres, or becomes displaced, and consequently uncomfortable. The care of the dressing is thus placed exclusively in the hands of the medical attendant, and a considerable economy of materials is ensured.

In spite of the limits of application, and the not very

startling results to be obtained by this mode of dressing, I feel confident that it is a most useful one for many cases, and if tried will be considered a very distinct acquisition. Lastly, I would point out its special applicability in certain cases where the medical attendant has reason to believe that the patient is intentionally setting up irritation and keeping a sore open. Here the advantages are obvious, since any tampering with the dressing is at once detected.

For the collection of the above cases I am indebted to my late dresser, Mr. Isaacs.

Ulcers of Leg treated by Unna's Method.

No.	Name.	Age.	Occupation.	Nature and duration.	Size of ulcer.	Medicinal treatment.	No. of dressings.	Duration of cure.	Previous syphilis.	Remarks.
1	J. B.	63	Cabman	Traumatic, burn, 6 weeks	4½ × 2½ in.	Mist. Fer. c̄ Mag.	4	5 weeks	—	—
2	T. B.	31	Fishmonger	Eruption, 10 weeks	Multiple, small	„	4	5 „	11 years	Veins dilated, scarcely varicose.
3	H. R.	43	Railway examiner	Blow, 2 months	4 × 3 in.	„	16	9 „	—	Old fracture of leg beneath ulcer; one two years previously. Rest.
4	T. G.	59	Carpenter	Trauma over cicatrix	—	Mist. Colch.	6	10 „	—	Enl. veins. Gout. Treated with Unna for last six weeks; with Lot. Plu. four weeks.
5	A. R.	40	Bricklayer	Varicose	1 × 1 in., 1 in. deep	Mist. Alb.	12	12 „	—	Varicose veins.
6	C. R.	23	Sugar refiner	Blow, 3 months	3 × 3½ in., and one small, 1 × 1 in.	Mist. Fer. c̄ Mag.	7	7 „	? 5 years, bubo, ch.	Ulcer healed on other leg.
7	J. M.	34	Ironfounder	Blow	3 × 3 in., circular	„	4	4 „	—	Central island.
8	C. B.	60	Cabinet-maker	Varicose, 14 years	2 × 1½ in.	Mist. Alb.	10	10 „	—	Varicose veins. Eczema.
9	G. B.	27	Florist	Abscess, Typhoid, 11 months	3 × ½ in.	„	12	12 „	—	Shining, no granulations; hard cicatricial edges.

10	W. P.	43	Gardener	Varicose, 6 weeks	—	Mist. Fer. c̄ Mag.	6	6	„	—	—
11	J. C.	41	Labourer	Varicose, 2 years	—	„	5	5	„	—	—
12	C. S.	28	Porter	Trauma, varicose, 4 years	3 × 1½ in.	„	4	4	„	—	Varicose veins eight years.
13	R. C. T.	39	Labourer	Varicose	—	Mist. Alb.	5	5	„	—	One week L. P. W.
14	J. L.	25	„	Varicose, 1 day	—	„	4	4	„	—	Vein burst one day previously only.
15	T. B.	48	Mason	Trauma, 14 days	—	„	7	7	„	—	Eczema.
	Females.										
1	A. B.	56	Married	Varicose, 12 months	—	Mist. Fer. c̄ Mag.	9	9	„	—	Three weeks L. P. W. Relapsed shortly.
2	A. H.	13	Scholar	Trauma, 5 weeks	1 in., circular	„	6	6	„	—	—
3	E. C.	57	Married	Varicose, 6 weeks	—	„	6	6	„	—	—
4	M. A. P.	40	„	Varicose, 1 week	—	Mist. Pot. Iod.	1	2	„	Tert. ulcer of nose	One dressing only, followed by Lot. Nigra.
5	L. L.	41	„	Varicose	—	Mist. Fer. c̄ Mag.	6	6	„	—	Six weeks L. P. W., followed by six weeks Unna.
6	M. A. L.	11	Scholar	1 week	1 × 1 in., both legs	V.F. and Ol. Morr.	9	9	„	—	—
7	E. C.	32	Married	Inflammatory	—	Mist. Alb.	3	4	„	—	One week L. P. W.
8	R. H.	21	Single	Trauma, 5 months	—	Mist. Fer. c̄ Mag.	5	6	„	—	One week L. P. W. after Unna. Not seen again (?).

ON CROSS FURROWS IN THE NAILS.

By W. W. WAGSTAFFE, B.A., F.R.C.S.,
LATE ASSISTANT SURGEON TO THE HOSPITAL.

These are more than pathological curiosities and are worthy of observation for what they indicate. That they occur much more commonly than is thought is more than probable, and I am accustomed to feel sure of finding them under very different circumstances. It was in the year 1870 that my attention was called to them by some remarks of Dr. Langdon Down and Dr. Wilks, at the Pathological Society, and it may be certain that any observations by these original observers and experienced pathologists are worthy of careful notice. In Dr. Langdon Down's case, which is recorded in the twenty-first volume of the Pathological Society's 'Transactions,' the cross marks on the nails were of the nature of opaque white lines, and were evidently connected with temporary arrests of nutrition. But if I remember rightly, he also mentioned the occurrence in himself of the simple furrows which I am discussing, and attributed them also to general defects of nutrition. Dr. Wilks gave examples of the same from his experience, and in the thirty-ninth volume of the 'Transactions' gives an illustration of the furrows occurring apparently from two bouts of sea-sickness in a patient. This engraving may be accepted as giving an excellent picture of the peculiar condition.

Since the year 1870, I have kept records of these furrows

in the finger-nails of patients from time to time, and my object here is to give, as far as I can, the conclusions at which I have arrived, and what may, I think, be learned from a careful observation of them. A further and more extended series of observations from medical practitioners, who have better means of tracing and following the life-history of these cases, may lead to useful conclusions and to new and practical ones.

Character.—For some time there is only a transverse shallow furrow, and this when near the lunula is difficult to identify. When it arrives at about the middle of the nail, *i. e.* about half way from the lunula towards the free edge, it is generally distinct, of marked depth in many cases, deeper in the centre than towards the side of the nails, and often dotted, but this dotting seems more common in nails which have longitudinal furrows and ridges. Later on sometimes, but not, I think, generally, an opaque white line may occupy the position of the furrow.

When appearing.—This is difficult to determine, for the groove is at first very shallow and ill-defined. But three months after an illness the furrow is usually well marked across about the middle of the nail.

Rate of movement of the marks.—This varied in different cases, as might be expected. Measurement was in all cases taken from the lunula as the only fixed line. After becoming well established the transverse furrow moved towards the end of the finger-nail

3·5 mm. in 29 days
" 40 "
" 49 "

} in three different cases.

They remain visible on the nails for a period of four to six months.

Seeing how the rate of growth in nails varies in the same individual according to circumstances, such as the time of year, use of the fingers, exposure to warmth, moisture, cold, and other influences, it would be difficult to draw any satisfactory conclusions. I have found too in normal cases—all in fact in which I examined carefully—that the rate of progress seemed more rapid as the mark neared the free edge, and this is not easily accounted for.

Effect of weather, temperature, local applications, special dyscrasiæ, &c.—Of these points I have no records, but it has seemed to me that the marks appear more readily in gouty subjects than in others.

How far is the appearance general on all the finger-nails?—This does not seem absolute, but generally all the nails are affected. Where there has been any difference between the two hands, the right has generally shown the furrows in preference to the left, but it has been more usual for both hands to show them. In some cases only special fingers have been affected, and speaking generally it may be said that the nails of the thumb and middle finger showed the marks more clearly than the others, and the ring finger least of all.

Do these marks appear without some discoverable local or general cause?—In only one or two cases out of about fifty could I not find sufficient cause, but it must be confessed that the knowledge of some previous illness has led me generally to search for these marks. However, on one occasion I examined the hands of a class (about twenty) of students in the out-patient room and found only two furrowed, and in each there was a history of some previous general illness, scarlatina in one case and measles in the other. But on other occasions I have found slight furrows without obvious cause.

General causes.—These may have been severe, as acute attacks of febrile diseases (scarlatina, measles, erysipelas, &c.) or slight attacks of the same general affections, but it is not uncommon to find the marks after what appear to be very slight ailments. In one patient they appeared to correspond with occasional very severe headaches of a lithæmic or gouty character, and here there was a marked hereditary tendency to headaches. Dr. Langdon Down also mentioned the occurrence of these marks in his own case after overwork, and I have found them on my own finger-nails after a sharp attack of cold which disabled me. Dr. Wilks's case too showed a definite correspondence with two periods of sea-sickness.

Local causes.—In one case, where the left hand was injured by the blow of a rocket-stick which fractured the metacarpal bone of the index finger, and the arm and hand remained

in a splint for a month, the finger-nails of the injured hand alone showed the transverse furrows, but the marks were found in all the fingers. My notes of this case do not make mention of any special excess or deficiency of the marks on particular fingers but only that all were affected, and I am therefore inclined to presume they were equally so. In another case there seemed to be the only probable cause found in rather forcible pushing back of overhanging skin from the "quick."

Probability of these furrows appearing in any case.—I do not remember being deceived in my anticipation of finding these marks after any acute febrile attack or any illness which might be expected to interfere with general nutrition. My experience of this appearance after local injury is limited to the case above narrated, but I should expect to find them after most local injuries, especially those which have been attended with nervous or vascular damage either at the time or by subsequent inflammation. I have not found them on the hands after childbirth nor should I expect to.

Occurrence on the toe-nails.—Of this I have no records, but I should expect to find them. However, they would not be so available for observation.

Suggested value of these marks.

Their occurrence and continuance within sight for from four, five to six months after an illness may sometimes be of value in proving that such an illness or interference with nutrition has taken place, but whether one will be able to indicate the severity of a recent illness by the depth or general distribution of the marks on many finger-nails may be worthy of inquiry. It may, however, be taken as of some value in proving or disbelieving the story of illnesses occurring within a certain time when there is occasion to doubt the patient. As nail-marks they can be used for the purpose of identification, but in this respect they are of course not peculiar. That they will indicate the rate of growth in the nail is probable, and this will I think be found to differ considerably in different individuals and vary with season,

weather, and other circumstances. Permanent interference with the growth and character of the nails in certain constitutional diseases like congenital syphilis has already been pointed out by Mr. Jonathan Hutchinson, but in these temporary marks and defects there seem to be a means of noticing the influence of passing interferences with nutrition. There are some other questions which arise on considering the subject. How early in life are the nails liable to have these furrows? As these furrows move towards the free edge, it is interesting to inquire how deep the moving part extends. It is apparently the only place where movement by new deposit or growth extends along the surface and is not terminal,—but that it is developmentally terminal is seen by the growth of the claws, their homologues in claw-bearing animals. Surface scars are said to alter their position by time, but this is evidently not an allied process. The moving forward of the nail towards the free edge involves, too, the periodical removal in unused or slightly used hands by paring, but where there is rough work, as among gardeners, I find that certain finger-nails, especially the thumb, are never pared, and so the wearing down process resembles what is found in animals. As the nail-marks move forward to what extent does the side overhanging skin also move forward towards the tip of the finger? Many of these questions could be examined into and noted by periodical photographing of the fingers, and this is an easy process in the present day.

APPENDIX.

By William Anderson, F.R.C.S.

I venture to add, with the permission of the author, a brief note founded upon a personal experience of my own. In June, 1888, I was attacked by erysipelas of the face and head, and for ten days suffered from pyrexia, diarrhœa, vomiting, jaundice, and insomnia, being unable to retain food, or to obtain more than an hour's sleep daily during an entire week. After passing through a rapid convalescence, I began to watch the growth of my finger-nails. About three weeks after the cure of the disease I observed a transverse furrow rising above the cutaneous fold concealing the root; it was distinctly marked in all the digits, but most characteristic upon the thumb; the groove was deepest

in the middle, gradually becoming more shallow as it approached the borders of the nail, and it was unassociated with any dotting of the horny tissue. At the end of three months the furrow had reached the mid point between the root and the free border, and a little before the close of the sixth month it had reached the point at which its sacrifice to the scissors became necessary. No observations were made upon the toe-nails. The hair of the head, eyebrows, and eyelashes began to fall out in large quantities immediately after recovery, and continued to do so for about two months, when the loss suddenly ceased, and a short, but strong new growth was perceptible. How far this shedding of hair may have been due to the local condition of the scalp, and how far it may have been attributable to the general impairment of the nutritive functions, it is not easy to say.

CONGENITAL STERNO-MASTOID TUMOUR OR INDURATION.

By H. H. CLUTTON, M.A., F.R.C.S.

As a difference of opinion is still sometimes expressed as to the cause of the congenital tumour or induration of the sterno-mastoid, I thought it would not be uninteresting to collect as many cases from my out-patient room as I was able conveniently to record. It will be seen that after all they only number eighteen in ten years, but it must be remembered that the difficulties in keeping such a record in the out-patient room are very great—and it is probable that this number falls considerably short of the total that were actually seen in the time specified. But I can assure my readers that there has been no selection of cases, except such as may have arisen by accident.

In none of the cases was there any evidence of syphilis, either in the history of previous children, if there were any, or in the mother's history; nor did any of the children themselves show any trace of this disease. If syphilis had been present in a small proportion of the cases it would not necessarily have proved that the tumour was of the nature of a gumma, as it might have been merely a coincidence that the child was the victim of syphilis, and had at the same time been exposed to such violence as to produce an injury to the muscles of the neck. But in the series here recorded there was no proof in any single case that syphilis

was present, although it was especially looked for, and the family history carefully investigated.

Primiparæ.—It will be noticed that in eleven of the cases, namely, 8 to 18 inclusive, the mother was asked if she had had any other children: and in six out of the eleven it is shown that it was a *first* confinement. This is of some importance, as it suggests that the tumour is more likely to occur after tedious labours. And in these six primiparæ it will be found, on referring to the notes of the cases at the end of this paper, that either the forceps were used or there was some irregular presentation requiring the exercise of some force to complete delivery.

Kind of labour.—In all of them a particular inquiry was made into the character of the confinement, to see if any considerable traction on the neck was likely to have been employed.

Breech or foot presentation.—Out of the eighteen eight were cases of breech or foot presentation. This is a very large proportion and would of itself suggest that it is in some degree responsible for the presence of the deformity in question. In addition to this fact there is evidence produced in most of them to show that either a midwife or some person, not a doctor, employed traction on the feet. The temptation to pull at the feet and get it all quickly over must be very great, but the strain which must consequently be thrown upon the muscles of the neck as the chin recedes from the chest, may in great measure account for the condition found in these cases. If no traction be employed the chin should remain in contact with the chest, and any stretching of the sterno-mastoid muscles would be avoided. But it is clear that if the body be brought down quickly by traction on the feet, and the head remains behind, there must be a very considerable strain on the front part of the neck when the chin leaves the sternum.

Head presentation.—The head presented in eight out of the eighteen cases; in three of these the forceps were used, in two traction on the head was said to have been employed by the midwife or some relative, and in the remaining three the labour was described as a natural one. Consequently in five of these eight head presentations, some force was pro-

bably used on an extended neck after the delivery of the head.

Turning.—In two of the cases the doctor is described as having turned the child. It is impossible to say what method was adopted, but it is probable that either, the head being brought into position, the forceps were applied or the feet were seized, and the lower extremities delivered first. In either case some traction may have been employed.

A tabular statement of these presentations would stand thus:

Head presentation (forceps 3) . .	8
Breech or foot presentation . .	8
Turning	2
Total	18

It must, I think, be conceded that, in these cases at any rate, the sterno-mastoid swelling has followed abnormal and difficult labours, for the presentations recorded are scarcely in their right proportion for eighteen labours.

If this be conceded, the question would arise as to what particular circumstances are there in these abnormal or tedious labours which would conduce to the development of this condition in the sterno-mastoid. Traction in some form or other seems to be the common resource in every case of difficulty or delay, and the neck from its flexible condition must receive more than its fair share of extension, whether the head be delivered first or last. Stretching then, of the muscles of the neck, would seem to the writer of this paper to be the most natural cause of the swelling. The sterno-mastoid muscle attached to the skull behind its centre, and in front to the clavicle and sternum, would be placed more upon the stretch than any other muscle in the neck when the head is thrown back and traction employed, and this is undoubtedly what occurs if extension is made from the feet when the child is being delivered. In head presentations if traction be employed after the head has appeared it would almost naturally be made from the chin and occiput. The same stretching of the sterno-mastoid muscle would occur as in the breech or foot presentation.

In all arguments of this kind one would like to be able to appeal to post-mortem evidence and histological examination, but the opportunities for such a proof must be very few. Dr. F. Taylor, 'Path. Soc. Trans.' vol. xxvi, 1875, from an examination that he made, argues against their syphilitic nature. And I know of no other record beyond one by Dr. Goodhart in Bryant's 'Practice of Surgery' which appears to be from the same case.

Mr. Tom Smith has, I believe, argued in favour of traction and rupture of some of the fibres of the sterno-mastoid as the probable explanation of the condition. Mr. Hy. Arnott in 'St. Thomas's Hospital Reports,' 1874, vol. v, p. 276, records eight cases, and clearly does not believe in their syphilitic origin nor does he accept Mr. T. Smith's explanation. But the actual presentation in each confinement is not stated. Mr. Parker, who records five cases in the 'Brit. Med. Journ.' 1880, vol. i, p. 515, saw no evidence of syphilis in his patients and finds it "difficult to disprove Mr. T. Smith's view." At the same time he does not willingly accept his explanation, arguing from two facts in his experience; firstly, that they were always hard and firm, and secondly that they were always situated at the sternal end of the muscle where it is chiefly tendinous in structure. In two of my cases where a record is made of the consistence of the swelling it is stated that the central part was soft or fluctuating, but this is clearly the exception and not the rule, with regard to the position of the swelling or induration in nearly all of my cases in which a statement has been made on this point it was situated in the upper half of the muscle. One other observation of less importance Mr. Parker makes, namely, that in all of his cases and in three or four others that he had observed in the practice of other surgeons the tumour occurred on the right side. In my cases six were on the right side, nine on the left, and in three this point was unrecorded.

Some people have argued that the induration cannot be caused by a rupture of the fibres of the muscle, inasmuch as it is quite unlike the rupture of muscle found in the young adult—as, for example, that which occurs in football. The explanation of the difference seems to me to lie in the fact

that in football the muscle or some fibres of it are ruptured by voluntary action, and the ends therefore are more or less widely separated, leaving a gap into which blood is effused, and into which in course of time the finger can be inserted and the depression felt. Whereas in the traction during confinement the act is merely a passive one, the muscle being stretched to its fullest extent, and the fibres being never really ruptured. In proof of this one may adduce the fact that the ruptured muscle in the adult always leaves a depression which may be felt throughout the remainder of life, whereas every one knows that the congenital sterno-mastoid induration recovers without leaving any depression.

If the stretching is sufficient some small vessels may be torn and blood extravasated, producing a hæmatoma with a soft centre such as has been noticed in two of my cases. But the vast majority are small hard fusiform swellings, and these must, I think, be the result of an inflammatory exudation from overstretching without actual rupture of the fibres.

One other point of interest arises out of the cases recorded in this paper. In two cases, Nos. 3 and 17, wry-neck is stated to have been subsequently observed.

In Case 3 there is no doubt that there was a permanent contraction of the sterno-mastoid, as the case was seen a great many times, and is still fresh in my memory. In Case 17 the note is made two months after the child was first seen, which is rather too early to feel sure that it would be permanent. In Case 14 a suspicion of the same condition was entertained. In both these cases the original tumour was described as a large swelling, and in one it was stated also to have a soft centre. There is some ground for thinking that this contraction was the sequel of inflammatory exudation, and it is probable that further observation would have shown that this entirely disappeared. The fact also that they ceased attending argues in favour of their perfect recovery.

The reader of this paper will gather from the above remarks that I am strongly in favour of the view which attributes the origin of this comparatively unimportant trouble to accidental injury in childbirth. I say that it is un-

important because they all tend to get well of themselves. Everyone agrees, I think, in stating that they require no definite treatment. The one case (No. 3) I record of permanent contraction like that of wry-neck must be exceptionally rare, and does not invalidate the general conclusion of their innocence to which I have alluded. I should explain that I was about to treat case (No. 3) of contracted sterno-mastoid by tenotomy when it disappeared from my practice.

Case 1 (1879).—Ada M—, æt. 3 weeks. Tumour of sterno-mastoid, noticed one week. No evidence of syphilis. Foot presentation. Midwife alone attended the mother in her confinement, and had to use force, but not in labour more than four or five hours.

Case 2 (1880).—Wm. N—, æt. 7 weeks. Tumour of sterno-mastoid. No evidence of syphilis. Breech presentation. No doctor present. "Ten minutes between appearance of feet and the delivery of head."

Case 3 (1880).—Harriet C—, æt. 6 weeks. Tumour of right sterno-mastoid. No evidence of syphilis. Twelve hours in labour. Feet presented and great traction had to be employed. In four months it is noted that the tumour had "quite gone."

This patient came again as an out-patient at seventeen months and again at two years of age with well-marked wry-neck from contraction of right sterno-mastoid. No contraction of trapezius.

Case 4 (1881).—Mary S—, æt. 1 month. Tumour of right sterno-mastoid upper half. No evidence of syphilis. Labour lasted twenty-four hours. No instruments were used. Breech presentation. Baby nearly dead when born.

Case 5 (1881).—George W. P—, æt. 7 weeks. Tumour of left sterno-mastoid, noticed at birth. Natural labour. Head presentation. No instruments used.

Case 6 (1881).—Edwin P—, æt. 1 week. Tumour of sterno-mastoid noticed a few days after birth. Mother attended by hospital obstetric clerk who was present in the out-patient room when the baby was brought for examination. He stated that the labour was a natural one, no traction and no instruments were employed.

Case 7 (1882).—Sidney T—, æt. 8 weeks. Tumour of right sterno-mastoid. No evidence of syphilis, but has ec-

zema of ears and groin. Tedious labour of three days. Head presentation: traction employed by midwife on head, which is stated to have been delivered three quarters of an hour before the body.

Case 8.—Edith B—, æt. 3 weeks. Tumour of right sterno-mastoid. No evidence of syphilis. Mother's first confinement. Two days in labour. Turning had to be employed by doctor.

Case 9.—Mary Ann J—, æt. 1 month. Tumour of left sterno-mastoid. No evidence of syphilis. Mother's first confinement. Very tedious labour. Forceps were used.

Case 10 (1883).—George B—. Tumour of left sterno-mastoid. No evidence of syphilis. Mother's second confinement. Tedious labour. Breech presentation. Midwife used a good deal of traction.

Case 11 (1884).—E. M. S—, æt. 3 weeks. Tumour of left sterno-mastoid. Small hard fusiform swelling in its upper third. No evidence of syphilis. Mother aged twenty-eight. Fifth confinement. In labour three days. Foot presentation. No traction employed. Doctor was present for about twenty minutes.

Case 12 (1885).—Albert E. T—, æt. 1 month. Tumour of left sterno-mastoid in its upper third. No evidence of syphilis. Mother aged twenty-nine. Second confinement. Easy labour. Head presentation. Attended by Hospital obstetric clerk.

Case 13 (1886).—Charles H—, æt. 3 weeks. Tumour of left sterno-mastoid increasing in size last few days. No evidence of syphilis. Mother aged eighteen. First confinement. Breech presentation. Midwife too late. Grandmother pulled violently at feet for fear of suffocation.

Case 14 (1886).—Walter B—, æt. 1 month. Tumour of left sterno-mastoid at junction of middle and upper third; long fusiform swelling with soft centre; left muscle shorter than right. Right clavicle deformed from recent fracture; first noticed two days after birth. No evidence of syphilis. Mother aged thirty; has had four children, some of whom had skin eruption, called eczema at Blackfriars. Was in labour, on this occasion, two to three days. Head presentation. "They all had a turn at the child's head." "Dragged away

at last," but no instruments were used. In two months the tumour had almost disappeared, but there was a suspicion of commencing wry-neck. The child was not seen after this note.

Case 15 (1887).—Oliver S—, æt. 5 weeks. Tumour of left sterno-mastoid at junction of upper and middle third. No evidence of syphilis. Mother aged twenty-three. First confinement. In labour twelve hours. Doctor said it was a "cross birth," and he "had to turn the child," consequently he employed traction by the feet.

Case 16 (1888).—Alfred P. J—, æt. 5 weeks. Tumour of right sterno-mastoid upper half. In part fluctuating. Accompanied by contraction so as to hold head down on that side. First noticed fourteen days after birth. No evidence of syphilis. Mother aged twenty-two. First confinement. Short labour. Head presentation. Instruments used by doctor.

Case 17 (1888).—Charles C—, æt. 11 weeks. Tumour of left sterno-mastoid at junction of upper and middle third. It was a large tumour but apparently confined within the sheath of the muscle. No evidence of syphilis. Mother aged twenty-three. First confinement. In labour two or three days. Forceps used. Two months after this baby was first seen, the tumour had almost entirely disappeared, but there was well-marked contraction on that side, producing wry-neck.

Case 18 (1888).—Emily P—, æt. 2 weeks. Tumour of right sterno-mastoid, high up. Small and hard. No evidence of syphilis. Fourth child. Very quick labour "Feet first."

ON TWO CASES

OF

NEUROPATHIC (HYSTERICAL) SPINAL DISEASE; ONE ATTENDED WITH HYSTERICAL DYSCHROMATOPSIA, THE OTHER BY MONOCULAR DIPLOPIA.

Remarks on the Nature and Diagnosis of the Affection.[1]

By THOMAS SAVILL, M.D.Lond., M.R.C.P.,
MEDICAL SUPERINTENDENT OF THE PADDINGTON INFIRMARY.

By neuropathic or hysterical spinal disease, I mean a collection of nervous symptoms occurring in a neurotic or hysterical person which at first sight very closely resemble those resulting from organic disease of the vertebral column. The distinction is not always an easy one, and these two cases, in addition to other points of interest, illustrate the difficulties which sometimes present themselves in, and the importance of deciding, the diagnosis. The first is a good illustration of the reality of the affection, and its curability under appropriate measures. The second illustrates the evil results which may ensue when inappropriate means are employed.

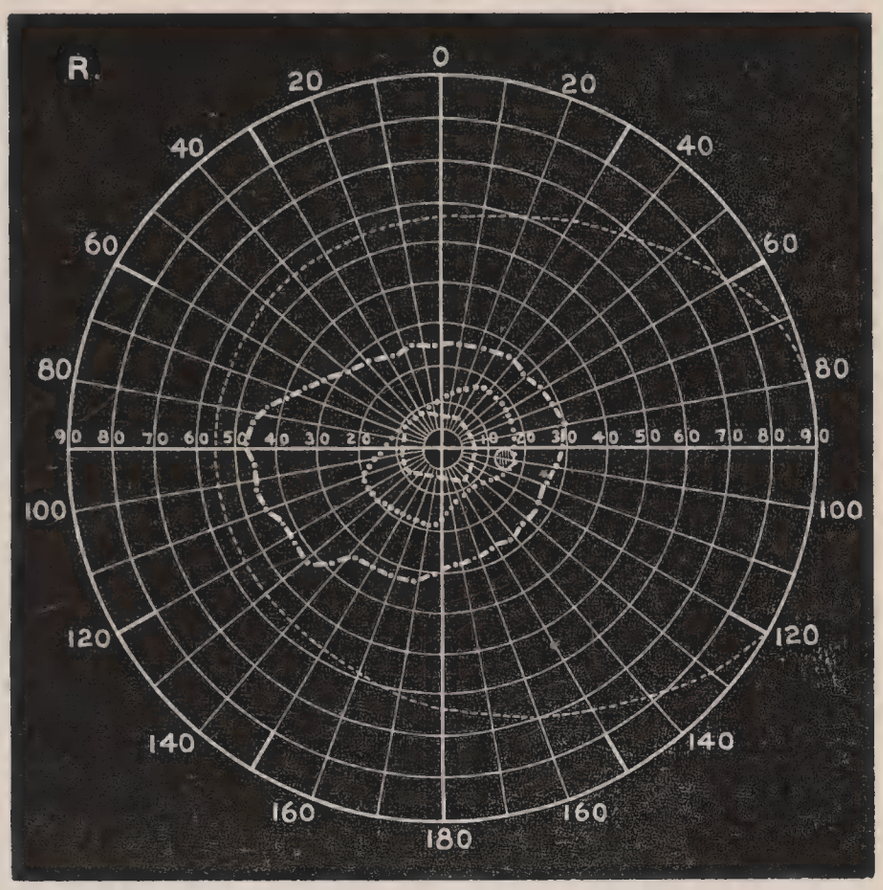
Case 1.—M. H—, a girl, æt. 19, a nurse by occupation, came into the Paddington Infirmary on May 12th, 1888. Three medical men had seen her and had agreed that she was

[1] Read before the Medical Superintendents' Society, April, 1889, when the two cases were exhibited.

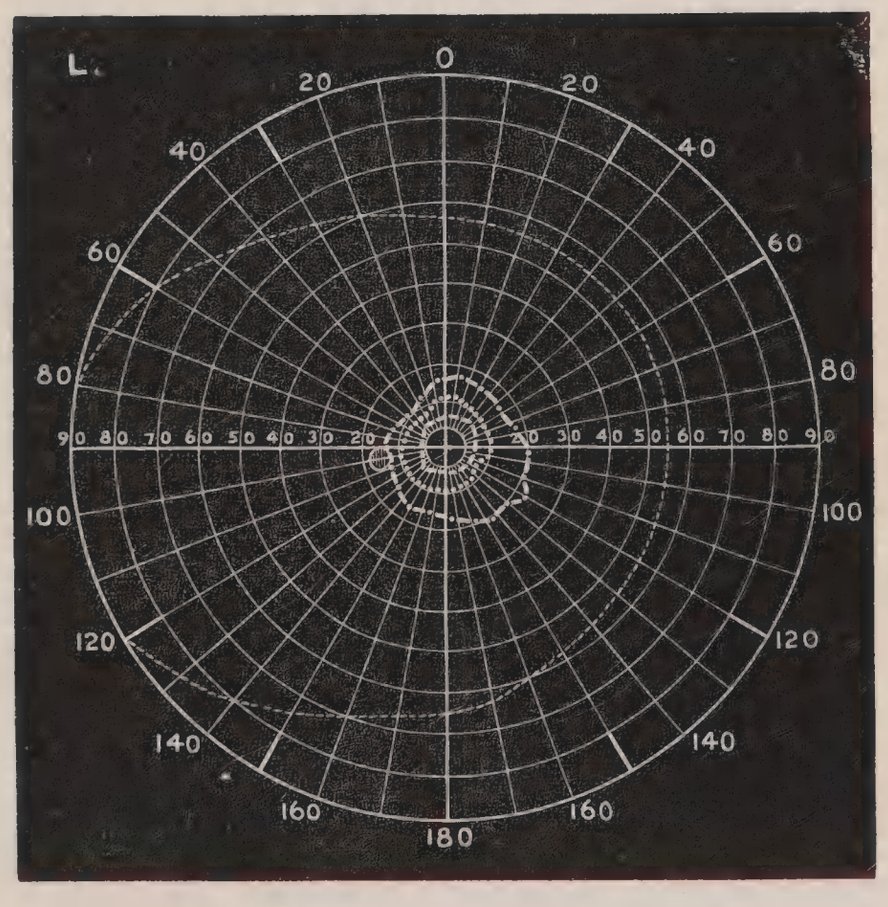
suffering from spinal caries, that she must give up work, and lie on her back. She was a bright intelligent girl who regretted being ill very much, and indeed she had every motive to keep well. She complained of much pain in the spine, increased by movement. There was some weakness in the muscles of the back, and tenderness on percussion over the spinous processes in the mid-dorsal region. The spine of the last dorsal and first lumbar vertebræ were rather prominent, and there was also slight lateral curvature. She had some weakness of the right hand and arm (Dynamometer R. hand 20, L.—40) and marked paresis in both legs, though more in the right one, which dragged when she attempted to walk. Although able to stand, she was barely able to walk a step without assistance, and every attempt greatly aggravated the pain in the back. The patella reflexes were increased and there was well-marked ankle clonus on both sides, but no rigidity anywhere. Sensation was diminished over the whole of the right upper and lower extremities and right side of trunk and face, and in patches entirely absent. There was no facial paralysis nor lesion of the other cranial nerves. The temperature was normal and remained so. There was well-marked ovarian tenderness on both sides, and the catamenia were very irregular. The heart and other viscera were healthy.

On examination of the eyes she was discovered to be slightly hypermetropic (tested by the ophthalmoscope, R. + 1·5 D., L. + 1·0 D.) but the fundi were normal. However, the fields of vision were markedly contracted, and an examination of the colour fields (made for me by Dr. G. W. Davis, on May 15th, 1888) revealed the existence of dyschromatopsia. Thus, besides a concentric retraction of visual fields for all colours, there was a disarrangement of these fields, the blue field being smaller than the red on both sides,—the reverse of what is found in the normal state (figs. 1 and 2). These conditions were found in both eyes, but were more marked in the left, the side opposite to the hemianæsthesia. This disarrangement of the colour circles had disappeared at a subsequent examination (made by Dr. H. E. Harris on August 24th, 1888), but the concentric retraction of the field of vision for white light was still present so late as February,

Right Eye.



Left Eye.



FIGS. 1 and 2.—Fields of vision of M. H—, May, 1888.
.-.-.-.-.- limit of White field, ... limit of Red field,
– – – – – limit of Blue field.

1889. This disarrangement of the colour fields of vision is a sign of much value as an evidence of the hysterical diathesis. It is by no means an infrequent one, it is often very permanent, and it cannot be simulated. The only drawback is the length of time required for the examination.

The patient's illness had commenced rather suddenly, four weeks before admission, with pain in the back. The numbness and weakness had come on subsequently, and she had taken to bed for about a week. There was no distinct history of injury, though the patient thought she must have "sprained her back." She had had the usual diseases of childhood, had been subject to "fainting fits," and had had transient attacks of weakness down the right side; but had never been laid up before. Her mother was "emotional" and her father rheumatic and excitable; but there were no other points worthy of note in her antecedents.

It is not surprising that this case should have been regarded at first sight as one of disease of the vertebræ with involvement of the spinal cord, for it revealed the main symptoms of this affection—pain, tenderness, and distortion of the vertebral column, and inability to walk. But, with the patient in the Infirmary we were able to make a more searching investigation, and thus to discover that the pain and tenderness were too generally distributed along the spine; that *light stroking produced as much uneasiness as deep pressure*; and, that the distortion of the spine was chiefly lateral. Moreover, the paresis and anæsthesia were not consistent with compression of the lower part of the cord. The weakness of the left leg soon passed off, and then we had hemiparesis and hemianæsthesia, both on the *same* (right) side.

On making her walk she presented that dragging of the foot—instead of circumduction at the hip—to which Brodie first directed attention as distinguishing hysterical from organic hemiplegia; and which has been more recently dwelt on by Gilles de la Tourette in the 'Nouvelle Iconographie de la Salpêtrière.'[1] Finally, on searching for evidences of the hysterical diathesis, we discovered the dyschromatopsia just mentioned, ovarian tenderness, an emotional tempera-

[1] Vol. i, p. 1.

ment, and hemianæsthesia, which added to her previous history clearly established the diagnosis.

She was accordingly isolated completely from her solicitous friends and relations, put on a large allowance of food, and given a cold shower-bath each morning. She also took a pill containing sulphate of iron, valerianate of zinc, aloes, and nux vomica, and was treated occasionally with the faradic brush. At the end of a week the paresis and anæsthesia had quite disappeared and the pains had gone. There still remained some general tenderness, and weakness of the spine. For these she was set to gymnastic exercises, isolation being still continued, and at the end of a month she returned to work. She has continued the laborious occupation of a nurse ever since (eleven months) ; though, as you have just now seen, one spinous process is prominent, and she still has contracted visual fields.

The rapid recovery under this kind of treatment amply justified the diagnosis. But, a like speedy cure is not to be expected in all cases. Indeed, I believe that the prognosis and the length of treatment required in these, as in other hysterical disorders, varies according to the previous duration of the disease, the age of the subject, and a hopeful as distinguished from a melancholic turn of mind.

Although the treatment of this girl comprised several items, there is good reason to believe that the favorable result was chiefly due to her removal from her sympathetic relations and from the surroundings amidst which the disease arose.[1]

Case 2. The second case is one which presented greater difficulties in the diagnosis. The patient is a woman named A. B—, æt. 27. Her family is very consumptive, but there is no history of "fits" or any nervous affection. At the age of eighteen she was subject to fainting and "nervous attacks," and later on she was the victim of "nervous" illnesses of various kinds, for which she was admitted into different hospitals. These attacks, of which she remembers at

[1] The patient still comes to the Infirmary from time to time. She is in good health, and still follows the profession of a nurse, but she still has contracted fields (October, 1889).

least three, consisted of a loss of power, or of feeling, or a stiffness, all down one side. She has often had "sore-throat" and frequently lost her voice, once completely for three months. On two occasions she had "blood-spitting" though not in large quantity. Fifteen months before admission she fell down a flight of steps, and ever since then has had more or less pain and weakness in the back, although she remained in service as a housemaid until shortly before admission. The catamenia have been very irregular.

In order to condense the clinical records of this case—which extend over two years, and have been made with great care and minuteness by several other observers as well as myself—they may be summarised into three periods.

I. She was first admitted into the Paddington Infirmary in January, 1887, on account of a severe "sore-throat," due it was found to follicular tonsillitis and pharyngitis. The lungs and other viscera were normal, and it may be noted at once that they always remained so.

II. Her convalescence from the tonsillitis was somewhat tardy. Still, she was getting up and about when, in March 1887, two months after admission, it was noted that there was some stiffness of the muscles of the neck. This symptom increased and was soon followed by pain and tenderness over the fifth and sixth cervical spines, increased also by pressure over the vertex and by movement of the head. Subsequently another tender spot was noted over the third dorsal spine. She took to bed again and was made to lie flat on her back; but in spite of that the spinal pain and tenderness persisted, and, though it varied a little in position from time to time, it continued in greater or less degree during the whole of the time (nearly two years) she was under observation.

In May, 1887, she spat up a small quantity of blood. It came up without effort, apparently from the back of the throat. There were no pulmonary signs or symptoms. Shortly afterwards she brought small quantities of pus on two or three occasions from the same source, and it was stated that after these discharges she became easier. No retropharyngeal swelling was ever discovered though she occasionally had some difficulty in swallowing. With this

exception nothing fresh occurred, and she was kept nearly always lying on her back, often with sand-bags on each side of the neck. By September, 1887, she had become much emaciated, weak and prostrate, though there was still no paralysis or loss of sensation either in the arms or the legs. But about this time she had some transient rigidity of both legs, and a marked increase in the response to percussion of all the tendons and muscles of the arms and legs, which persisted, and which even still, as you can see for yourselves, exist in some degree.[1]

Matters went on thus from month to month, the case was regarded as one of spinal caries following a very chronic course, which nothing but rest and time would relieve Among the other symptoms noted during the ensuing twelve months (September, 1887, to 1888) were—aphonia from time to time, though the larynx when examined was healthy; tenderness in both inguinal regions; retention of urine on one or two occasions, but never incontinence; severe persistent headache throughout; and during this period the temperature on some half-dozen occasions reached 99·5°, but there was rarely any departure from normal. The emaciation increased more and more, giving rise to an appearance of prominence of the spinous processes especially in the cervical region, and accordingly, in the latter part of 1888, a Sayre's jacket and jury-mast were applied.

In September of that year two fresh symptoms appeared in the shape of transient internal strabismus, and *monocular diplopia.* These signs were what first aroused doubts as to the correctness of the original diagnosis.[2]

In October, 1888, she had a very violent fit of temper at being made to lie down so much; and another in February, 1889, in which she screamed loudly, threatened violence and

[1] I have frequently observed, in common with others, that this increased myotatic contraction is liable to occur in any patient after long confinement to bed, and therefore has no special diagnostic value unless indeed it points to the hysterical diathesis.

[2] Prof. Charcot and Dr. Parinaud have described this diplopia as having special features in hysteria, 'Leçons sur les Maladies du Système Nerveux,' tome iii, p. 323. Hysterical diplopia is accounted for, according to Dr. Parinaud, by an error in the contraction of the muscle of accommodation (muscle of Brucke) ('Annales d'Oculistique,' May and June, 1878).

suicide, and stormed round the ward with a poker. So noisy was she that it became necessary to transfer her to the lunatic ward of the workhouse.

III. She soon, however, regained her self-control and was sent back to the Infirmary six days later (February 19th, 1889). During the two years she was under observation she had been seen by many medical men of acknowledged ability, and regarded by most as a case of cervical caries. It was thought difficult to account for the main symptoms on any other supposition; viz. the constant pain in the neck and back; the tenderness on percussing the cervical and dorsal spines, or pressure on the vertex; the stiffness of the muscles of the neck at one time; the discharge of blood and pus from the throat; and lastly the apparent prominence of the cervical spinous processes. But, on the other hand, it was thought curious that she should have been not only capable of such activity as has just been mentioned, but that her condition should not have been injured thereby; and on her readmission a thorough review of the case was made in the light of her past history and the inefficacy of former treatment. That this patient was the subject of the hysterical (or neuropathic) diathesis seemed evident from her previous history of aphonia and other neurotic troubles, and also from the "ovarian tenderness," transient internal strabismus, *monocular* diplopia, and aphonia with which she had been affected from time to time while under observation. Moreover, turning to the symptoms of her disease, the spinal pain and tenderness from which she had suffered all along, though not always in the same locality, was but little, if at all, relieved by rest. And further, although the disease had existed for two years there was no real deformity or fixation of the spine or ribs, no paralysis beyond the weakness of disuse, no fever or constitutional symptoms worthy of note, if we except the general wasting.

On her re-admission into the Infirmary in February, 1889, the pain and tenderness still existed, and she was emaciated to the last degree. But the tenderness was by no means proportionate to the force of percussion over the spinous processes and was diffused, like the pain, along the whole spine; and at that time there was very little, if any, stiffness. There was

hyperæsthesia over the whole of the right half of the body, marked "ovarie" on both sides, and some diminution in the field of vision, though not to the same extent as in the first case. This was deemed sufficient evidence to justify a different line of treatment. The apparatus was according removed, she was isolated, allowed to get up, put upon a large amount of food, and treated by massage of all the limbs and the back. In the course of one month she gained 8 lbs.; and she is now (April, 1889) able to polish the floor of the ward without much inconvenience; and, though the spinal pain and tenderness still remain in a less degree, she has much improved in every way. The apparent prominence of the spinous processes is disappearing in proportion as the spinal muscles resume their normal volume.

It is of course a question whether this case may not have originated as organic spinal disease started by the fall, and the symptoms been perpetuated as a neurosis. If so, would not the symptoms have appeared sooner than seventeen months after the accident, during fifteen months of which she was engaged in active work? It could not have been organic disease directly produced by the injury. Could it have been spinal caries coming on in the early part of her two years' stay in the Infirmary undergoing resolution, the symptoms only being perpetuated as a neurosis? This could not have been of a serious nature else we should have found angular curvature after all that time.

But, you will ask, how are we to account for the discharge of pus and blood in the early part of the case? I would suggest that this was due to the formation of a retro-pharyngeal abscess following the tonsillitis and pharyngitis for which she was admitted on the first occasion. This I believe to have been the organic basis which, grafted on to a hysterical diathesis, gave rise to those neurotic manifestations which, taken together, formed such a perfect picture of cervical caries as was well calculated to deceive. It is thus also that one is able to account for the stiffness of the neck occasionally noted, which is not a frequent attendant of neuropathic spinal disease. That this patient is a subject of the hysterical diathesis is beyond doubt; and the case is undoubtedly an illustration of a local lesion

(pharyngeal abscess) determining both the nature and seat of the manifestations of that diathesis; just in the same way as luxation of the ankle in a person affected with the gouty diathesis will determine an acute attack of gout in that joint.

I should like, in conclusion, to draw attention to a not infrequent combination of symptoms that this patient presented, a combination which others doubtless have noticed before—nerve prostration (neurasthenia), severe intractable headache, and fits of ungovernable temper almost amounting to mania (mental instability). Even the first patient rebelled at her seclusion. But, it is a point not altogether without interest, in reference to the suspicion of simulation which often attaches to these cases, that both are profoundly grateful for their recovery.

Remarks.—That the adjective hysterical has by long usage and established custom come to be connected with a condition of the nervous system which develops symptoms on slight provocation, and that it conveys a fairly definite idea to the mind of the reader, must be my excuses for its employment. But it has serious objections in its etymological inaccuracy and in the significance and opprobrium given to it by the laïty. The term neuropathic has not these objections, and its use is therefore preferable, but like all new names it does not convey so definite an idea. I take it to mean a collection of nervous symptoms due to a dynamic alteration of the nervous system; and neuropathic spinal disease to be a collection of nervous symptoms occurring in a neurotic (or hysterical) person which very closely resemble injury or disease of the vertebræ or their ligaments.

The condition I have described under the head of neuropathic or hysterical spinal disease is no doubt allied to other clinical conditions. It belongs to the same group, though it is not identical with the neurasthenia spinalis described by Beard and others,[1] in which the main symptoms are weakness of the back and an aching weariness in the limbs. Some of the cases described by Thomas Brown, Teale, Stilling,[2] Radcliffe and others, under the names spinal irritation

[1] Quoted by Hilton Fagge, vol. i, p. 452, 2nd ed.

[2] 'Untersuchungen ü. die Spinal-Irritation,' quoted by Hilton Fagge, op. cit. p. 473.

and rachialgia (neuralgia of the spine), undoubtedly correspond with this condition. But these observers gave so wide a scope to their definition of this disease that these names would include hysterical spinal disease and a good many other neuroses affecting the spinal nerves. Sir James Paget[1] describes the same disease as that we are now considering under the name "Nervous Mimicry (neuromimesis) of diseases of the spine"; and there is no doubt that most of the cases of "Railway Spine"[2] correspond precisely with this affection, and are explicable after the same manner; that they are in fact neuropathic spinal disease initiated by an injury. Exception may fairly be taken to the terms mimicry and mimesis as casting doubt on the reality of the affection, whereas it is as real a condition as the spinal caries to which it bears so close a clinical resemblance.

All of the conditions above named are doubtless allied to each other, and to the hysterical (or neuropathic) temperament. Whether the existence of the hysterical diathesis was in every instance suspected and looked for is not always apparent, and this makes me the more desirous to bring the matter under notice, and to lay special stress on the ocular phenomena, particularly as regards the alterations in the field of vision, which as Charcot and others have pointed out, are such constant accompaniments of this neurosis. On this account they are signs of much value, and also because they cannot be simulated or exaggerated. Hence also they are of much importance for purposes of prognosis when the condition arises from railway or other accidents in which the question of compensation is raised.

If one may judge by four years' Infirmary work, cases of neuropathic spinal disease in varying degrees are by no means uncommon, and, as I have said, present much difficulty in diagnosis from the earlier stages of organic disease of the spinal column. Indeed, one may find all the signs and symptoms of the latter condition without any real disease of the vertebræ. In both the organic and the neurotic disease there may be pain and tenderness over the spine, and the various

[1] 'Clinical Lectures and Essays,' p. 227.

[2] Vide 'Injuries of the Spine and Spinal Cord,' by Herbert Page, London, 1885.

sensory and motor phenomena. It is only by a careful investigation of each symptom that one is able to arrive at a conclusion.

First. As to *deformity of spine.* It is well to bear in mind that prominence of the spinous processes may be apparent only, from atrophy of the back muscles; that lateral curvature, even when attended with marked weakness of the back, does not necessarily imply organic disease; and finally, that irregularities and prominences of the spinous processes frequently exist without disease of any kind. These facts have been particularly impressed upon me by my experience at the Exeter Hall Gymnasium, where a large number of healthy persons pass through my hands and where the horizontal bar and the trapeze prove conclusively the absence of real vertebral mischief.

Secondly. Occasionally there is *stiffness* of the back muscles and stiffness in movements of rotation and flexion, but more generally this is absent in the neuropathic affection; the far more usual condition is a *flaccid weakness.*

Thirdly. The spinal *pain,* though it may be localised, has a tendency to shift its position, and is not, I believe, usually relieved by dorsal decubitus. *The tenderness produced by superficial stroking over the spine or pinching the skin is often as great as that produced by forcible percussion;* it also has a tendency to be diffuse.

Fourthly. On careful examination the relative distribution of the *paresis, anæsthesia,* and *neuralgiæ* do not correspond precisely with each other and with the locality of the supposed pressure upon the spinal cord or its nerve roots.

Fifthly. The absence of pyrexia and other *constitutional signs* sometimes aid in forming a judgment; though, as we have seen, the wasting may be extreme.

Lastly. The presence of other *evidences of the hysterical diathesis*—hemianæsthesia, patchy anæsthesia, ovarian tenderness, retraction of the field of vision, "nervous" attacks, &c.

But it behoves us also to take care in an opposite direction, and not to mistake organic spinal disease for the neuropathic condition. It is in the earlier stages that the mistake is most liable to occur; and then a diminished mobility, a

stiffness of the affected part of the spine, owing to a reflex spasm of the muscles, is, according to most practical surgeons, the most constant sign of vertebral disease.

Moreover, there are other conditions attended with backache—lumbago, rheumatism, gout, uterine, ovarian, and renal disease—which need not detain us. But there is one affection, happily a rare one, spinal pachymeningitis, which in its symptoms and course for the first few months exactly resembles neuropathic spinal disease. It is only by the circumstances under which the disease arises, and the known rarity of the meningeal affection, that a decision can be hazarded.

In conclusion, let us turn for a moment to the pathology of the affection under consideration. The impression which I have formed from my own experience and from the records of others is that most if not all the cases of neuropathic or hysterical spinal disease probably have some trifling organic origin, at the outset at any rate,—that they ought more properly to be called "hystero-organic." The organic substratum may be slight, very slight, amounting to no more perhaps than a congestion or a trifling luxation, but yet sufficient to *determine the seat* of the neurotic symptoms, and to call forth the manifestations of the hysterical diathesis. Of course, in some instances the existence of this organic basis is a matter of mere conjecture, but in others—as in one, at any rate, of the cases before us—its existence is more evident; or perhaps a slight irregularity of spinous processes points to former mischief, and therefore to a predisposition to recurrence. It may happen that a girl with a strongly marked hysterical diathesis, fostered perhaps by indulgent parents, and by a luxurious or "introspective" mode of life, lifts a heavy weight, or slips, and incurs a trifling rick in the back. In a perfectly normal constitution the latter would pass unnoticed, but the slight pain by constant "Attention," becomes intensified; other symptoms follow and are developed in the same way, and persist long after the initial congestion or sprain from the injury has passed away. The paraplegia in these cases is doubtless the result in the first instance of the pain produced by walking. This is slight at first, but is fostered by Attention in the way just mentioned, and thus he idea of motor weakness becomes engendered.

The principle of a very slight local physical change being present at the onset, and originating these psychical phenomena, and determining their peripheral locality, may, I believe, be applied to many other manifestations of that puzzling neurosis, hysteria. Space forbids my going further into this interesting question now; but this is doubtless the reason why manifestations of hysteria nearly always take the form of—or mimic, as some say[1]—a collection of symptoms usually associated with some local organic change. These hysterical or neuropathic diseases would thus seem to be the symptoms of a slight local irritation fostered and developed by Attention, and preserved long after the local mischief has disappeared.

But, whatever be the pathological explanation, the diagnosis of this kind of nervous affection from true local disease of the spine is of the highest importance, and is only equalled by the difficulty sometimes experienced in accomplishing the task.

The lines of treatment for these two diseases are so essentially diverse; and each malady is aggravated by the treatment appropriate to the other. Hysterical spinal disease under suitable measures is an eminently curable affection; but with the local and general rest called for in the other disease this condition is much aggravated, as indeed we saw in the second case. On the other hand, to treat spinal caries by the exercise, massage, and cold douches appropriate to the nervous condition, would be to ensure a disastrous issue of what is under any circumstances a serious malady.

In any doubtful case it is assuredly wiser not to employ any kind of treatment which would be injurious if local disease existed. But, once the diagnosis fixed, I believe gymnastic exercises and isolation to be the best treatment, and for the slighter cases the only kinds necessary.

[1] Paget, 'Clinical Lectures and Essays.'

ST. THOMAS'S HOSPITAL

FOUR CASES

OF

FOREIGN BODY IN THE AIR-PASSAGES.

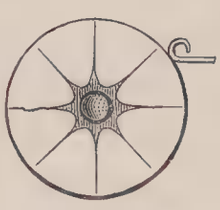
By BERNARD PITTS, M.A., M.C., F.R.C.S.

These cases illustrate so well the symptoms and treatment of foreign body impacted in the larynx, trachea, and bronchi, that I have thought they might find a place for permanent record in our hospital 'Reports.'

A paper founded on these cases was read before a branch meeting of the British Medical Association at Sydenham in March, 1889, but has not been published.

Case 1.—Charles G—, æt. 50, was admitted into St. Thomas's Hospital under my care on June 2nd, 1886, with symptoms of foreign body in the right bronchus.

His history was a remarkable one; he had for some time earned a living by passing sham jewellery at pawnbrokers' as made of pure gold. The round ear-ring illustrated by the drawing has gold on the circumference and at the back, where it would be tested, but is merely coated on the surface. Its real value is about 2*s.* 6*d.*, but he was in the habit of obtaining 10*s.* from the pawnbrokers after they had applied a test to the back.



Natural size.

On May 7th he was detected and given into custody; the

policeman seized him by his collar as he was attempting to swallow the ear-ring in order to hide the evidence. He had a violent fit of choking and was very sick, and lost his voice completely. He was charged in the afternoon, and was obliged to write his defence.

On May 10th he attended the sessions, but made no complaint of his throat, although his voice was gone, and he had pain on the left side of the neck. He was sentenced to six months' hard labour, and was admitted at Pentonville on May 23rd. He came under the care of my friend Mr. Cowen, the Assistant Surgeon to the prison, who recognised the condition and placed him in the infirmary.

I saw him in consultation on May 26th ; he could then only speak in a whisper, his face was dusky, his breathing noisy and laboured, and he had a constant secretion of saliva and a metallic taste in his mouth.

By external examination and digital exploration of the pharynx nothing could be detected.

Dr. Semon saw the patient with me on the following day, and by the aid of the laryngoscope was able to see something bright by the left vocal cord. As the ear-ring had a sharp-pointed catch it was not thought wise to attempt extraction by the mouth, but the patient absolutely refused an external operation, saying he would not have his throat cut. We left tracheotomy instruments in case of sudden spasm. He was, however, such a constant source of anxiety that a free pardon was granted by the Home Secretary on condition that he came into hospital for treatment.

On admission, June 2nd, it was found that the conditions had altered. On the previous Sunday, after a violent fit of coughing, the patient had felt the ear-ring slip down his trachea. His voice was almost restored, but he had severe pain on the right side of his chest (about the junction of the third rib with the cartilage). Air was entering the left lung more freely than the right, no musical rhonchus could be detected, his breathing was easy, but occasionally he had fits of coughing, following by slight dyspnœa and some expectoration tinged with blood. Dr. Semon again examined him with the laryngoscope ; the left cord was fixed by inflammation around it, but no foreign body was now visible.

After watching him for a time it was determined to try inversion, and on June 17th he was accordingly held up by his feet and violently shaken and slapped on the back. I was ready to perform immediate tracheotomy if any signs of spasm ensued. Nothing at the time occurred, and he was put back to bed in a very exhausted state. About one hour afterwards he had a violent fit of coughing, attended with some bleeding, and suddenly the ear-ring was ejected with such force as to hit the wall close by his bed. He made a complete recovery, and a few days afterwards left the hospital quite well. I saw him a few weeks later; his voice was then normal. He informed me that he was going to America.

This case illustrates well the change in symptoms when a body passes from the larynx to a bronchus. The patient, by his obstinate refusal to have the body removed by an incision in the crico-thyroid space, made possibly a more satisfactory and certainly a more interesting recovery, but the risk he ran was very great, and he certainly fared better than he deserved, for a free pardon and spontaneous ejection of the body from the lung were events hardly to be anticipated. The proposed opening just below the larynx would have afforded easy access to the ear-ring, and it would have been removed with much less risk to the cords than by any attempt from the mouth, even by a practised manipulator like Dr. Semon.

The man's real objection to this procedure was that he did not fancy any operation in prison; he was quite willing to submit to any treatment thought advisable after his release. Instances of successful inversion are not very numerous, but it was thought right to give the patient the chance before opening the trachea low down and attempting the extraction by forceps.

Case 2 is one of an unusual character, for the patient had a foreign body in the trachea, which necessitated instant tracheotomy, and he had also evidently a second foreign body impacted in one of the divisions of the right bronchus, and which occasioned an acute abscess of lung, which after a long illness completely healed.

Arthur G—, æt. 9, was brought in a cab to St. Thomas's Hospital on the evening of December 29th, 1880, in an insensible and asphyxiated condition. I found the lad lying in this state on the casualty table, and his father stated that fifteen minutes before he was at play with some companions, and was seized with sudden difficulty of breathing whilst eating chestnuts. His father ran with him in his arms to a doctor, who passed a probang without relief, so he was immediately sent on to hospital. Throwing the boy's head back, I cut into his trachea, dividing the cricoid and the upper rings. Very free dark hæmorrhage occurred, but no relief was afforded. With a female catheter that one of the students happened to have in his pocket case I probed the trachea, and something was shot past the opening into the larynx. Bleeding then ceased, blood was coughed out of the wound, and air at once entered freely.

With a pair of forceps, a piece of chestnut of the size and shape of a die was then easily extracted from the larynx, and after a little artificial respiration the boy soon came round. A silver tube was introduced, and he was put to bed in a small ward. He passed a fairly quiet night, but the next morning, though air was entering freely by the tube, the respirations were hurried, and there was considerable spasmodic cough and deficient aëration of the upper part of the right lung. There was a marked difference in the breath sounds on the two sides.

There could be, therefore, very little doubt that there was still a piece of chestnut remaining in one of the divisions of the right bronchus.

Chloroform was given, the tube removed, and the boy held up by the feet and smartly patted with the hand on the back, but without result. The sides of the opening in the trachea were then attached by a suture to the edges of the skin, and the ligatures fastened by tapes at the back of the neck, so that the tracheal opening might remain patent, and every chance be given for the escape of the foreign body. For the next three or four days there was no special change, the temperature varied from 101° to 103°, and there were signs of bronchitis pretty general over both lungs. The sputum

became very offensive, and the upper half of right lung was dull on percussion.

A condition much like acute phthisis soon became established; great emaciation, copious sweating, and horribly offensive muco-purulent expectoration, the temperature each night reaching as high as 102°. Creasote was used as a disinfectant in the steam kettle, and stimulants were freely administered. The opening in the trachea was allowed to close.

January 25th.—There was now complete dulness over the upper half of the right lung, with amphoric breathing and crack-pot sound, with signs of cavity evident anteriorly. On January 28th cough was still constant, with expectoration of offensive matter, and evening temperature of 101°. After this date he slowly began to improve, and was able to leave for a convalescent home early in March. I saw him again in August of the same year; he was then in very good health, he had no signs of any lung mischief. The cavity had completely contracted, and the only evidence of its previous existence was a little falling in of the upper ribs anteriorly on the right side.

Three years afterwards the boy was in good health, but a little flattening on the right side was still evident.

It is very probable in this case that the boy had several pieces of chestnut in his mouth, and that whilst laughing or speaking two portions entered the air-passage. It is, however, possible that only one piece was sucked in, and that when the catheter was passed down the trachea a portion of the instrument was broken off and slipped into the bronchus.

The tracheotomy was done under disadvantageous circumstances, and with no time for ordinary precautions. The instruments used were very likely not perfectly clean, and blood no doubt entered the bronchi, and the operation was done in the open casualty room in December, so that the immediate acute bronchitis might be easily explained; but the after local consolidation of the lung, and abscess ensuing, with the frequent recurring attacks of spasmodic cough, can only be accounted for by the continued impaction of a foreign body.

How rapidly abscesses in the lung may follow such an

impaction was well shown in the case of a child aged six years, who some years ago died at St. Thomas's Hospital.

On September 23rd, 1884, a puff dart was sucked into the left bronchus, and remained there fixed.

On October 3rd the lower half of the left lung was solid.

On October 14th the lung was consolidated throughout, and there were signs of cavities commencing.

Death occurred on October 25th, and, post mortem, the dart was found, with its large end filling the entrance of the left bronchus. The whole of the lower lobe of the left lung was grey and solid, containing numerous cavities filled with purulent matter. The upper part of the lung showed patches of lobular pneumonia. This case was reported by Dr. Hadden in vol. xxxvi of the 'Transactions of the Pathological Society.'

When called to a patient, and finding him insensible and asphyxiated, and not a second to be lost, one is tempted to perform laryngotomy, as the easier and quicker operation. But most surgeons will agree that a free opening into the trachea is essential when a foreign body is probably the cause of the obstruction.

A pocket case gives one all that is necessary, and a tracheotomy tube is quite of secondary importance, and may be procured and introduced at one's leisure if afterwards necessary.

In operating on young children, the difficult and anxious moment is often when a hurried attempt is made to introduce a tube. After opening the trachea, instead of keeping the finger at the opening, and making this attempt to pass the tube at once, it is far better to separate the sides of the tracheal opening by hooks, or by two pairs of forceps, to look into the trachea and remove any membrane or other foreign body, and then proceed quite quietly to introduce a tube, when one is satisfied that all is right.

Case 3.—Ethel P—, æt. one year and ten months, of Harlow, in Essex, was admitted into Great Ormond Street Hospital on August 30th, 1887, with some distress of breathing; the voice was nearly natural, but loud inspiratory and expiratory stridor could be heard over the trachea, and to a

less degree over both sides of the chest. With each inspiration there was marked retraction of the lower part of the thoracic wall. The lungs were resonant all over.

The previous history was that the child was quite well till five weeks before admission, and was then suddenly seized with a severe fit of choking whilst eating some chicken. The stridulous noise during breathing was at once noticed, and had continued ever since.

On September 10th, under chloroform, I opened the trachea below the isthmus, and all difficulty of breathing at once ceased. The isthmus was then divided, and the opening in the trachea extended upwards as far as the cricoid cartilage. On holding the trachea open with hooks a foreign body was seen lying on a bed of granulation tissue on the left side of the trachea. This was seized with forceps and gently extracted. It proved to be a portion of the rib of a chicken, and is shown in the drawing of its natural size.

Natural size.

The granulation bed was now scraped away, and the spot dusted with iodoform. The opening in the trachea was sutured with catgut, the soft parts brought together, and the neck encased in a wool dressing. Within an hour after the operation the child was perfectly comfortable, sitting up in bed and crying for food. Four days afterwards the dressing was removed, and the wound found firmly united.

There was in this case a clear history of immediate distress and continued irritation after eating chicken. The symptoms pointed strongly to the trachea as the position of impaction. The voice was little altered, and the stridor was most marked over the trachea. The tracheal opening was made low down, to allow of a complete exploration. The chief point of interest, however, is in the primary suturing of the opening. If successful, this procedure must save the patient from the risk of bronchitis, and shortens the period of recovery. Very few cases of suture of the tracheal opening have been recorded, but I believe this practice is to be recommended in cases where the foreign body has been lodged at a reasonable distance from the larynx, and when spasm of the glottis is not likely to ensue.

The result in this case was certainly most satisfactory, for the child was practically well directly after the operation.

Case 4.—Herbert S—, aged 4½, of Kettering, was admitted to Great Ormond Street Hospital on April 22nd, 1887, for loss of voice and noisy breathing.

On the Sunday after Christmas, whilst at the dinner-table eating rabbit, he was taken suddenly with a paroxysm of dyspnœa, and got black in his face. His mother put her finger down his throat and states that she felt the end of a rabbit bone. Loss of voice followed, and the next day he had signs of acute laryngitis, and tracheotomy was contemplated by the medical attendant.

On careful inquiry it was ascertained that twelve months before the child had loss of voice for two days, but with this exception he could always speak and cry well until the supposed swallowing of the rabbit bone; according to the father the breathing for some time after this was like a "pig snoring." Father and mother healthy, but history of phthisis on mother's side.

On admission, fairly nourished child, only able to speak in a hoarse whisper. Slight dyspnœa at nights. Laryngeal examination of throat was made, but nothing abnormal was seen.

On April 30th I made a high tracheotomy, dividing the cricoid and first ring of trachea. On looking upwards some small bodies, looking like papillomata, could be seen just below the cords, and the diagnosis was made accordingly of papillomata of larynx.

The child recovered well from the operation, and wore a tube till July 5th. He had then much improved, and was able to speak in a loud, hoarse whisper, though with an effort. When asked to speak loudly he drew a deep inspiration, and then uttered what he wanted to say. Thinking it time to do some more radical operation, after the introduction of an expanding tube I opened the thyroid in the middle line for three quarters of its extent, and on holding the sides apart it was seen that the mucous membrane on the right side, just below the right vocal cord, was ulcerated,

and that the supposed papillomata were portions of mucous membrane which had lost their attachment to the cord.

The left cord was healthy. The edges of the ulcer were undermined and serrated.

A prolonged search was made for any evidence of foreign body, but nothing further found. The ulcer was scraped, and dusted with iodoform, and the thyroid cartilage brought together by catgut sutures through the superficial tissue.

The operation was followed by rise of temperature for two days, but after this the boy made a quick recovery, and was out for a drive in ten days, and in three weeks the tracheal opening had closed, and the boy left for home with fair voice returned. In February, 1888, the father wrote to say that he was well and strong, could speak plainly, and could be heard distinctly at a distance of fifty yards.

The diagnosis, unfortunately, in this case must remain obscure, but considering the sudden history, it would seem most probable that a small portion of bone was impacted in the larynx, and by its presence produced the ulceration, the bone afterwards being coughed out unknown to the parents.

The only other explanation that would seem possible is that the ulcer was a tubercular one, but it is very unlikely that it would have remained so localised, and that the after history would have been so satisfactory.

As regards the exploration by external incision of the larynx, if it be conducted so that no blood enters the bronchi, it is an operation free from risk and simple in character. If the division is not made completely through the upper margin, the accurate adjustment of the sides is certain, and the parallelism of the cords is maintained, so that loss of voice need not be feared as a result.

For suspected foreign body, or for diagnosis of a doubtful case of malignant disease, or for the treatment of multiple papillomata, such exploration should surely be undertaken.

ONE THOUSAND CASES

OF

CHRONICALLY ENLARGED LYMPHATIC GLANDS TREATED BY EXCISION.

By H. MILTON,

CAIRO NATIVE HOSPITAL.

A very short experience of the diseases met with in Egypt sufficed to show the necessity of seriously considering the plan to be pursued in the treatment of chronically enlarged lymphatic glands. The number of patients suffering from this disease is as incredible as is the extent to which the disease itself is allowed to develop before medical aid is sought.

The glands chiefly affected are the cervical; most frequently those behind the sterno-mastoideus, but in many cases also those in front of that muscle and those of the submaxillary group. In about 10 per cent. of the cases the axillary glands only were enlarged, and in only five of the whole number of cases observed were the femoral glands affected. The condition of the glands differed in no way from that generally known as strumous lymphadenitis, and presented three more or less well-defined varieties. In the first of these the disease was limited to one or two glands of very large dimensions (reaching not unfrequently the size of a turkey's egg), soft

and transparent in section, occasionally with one or two small caseating patches in the centre, and very easily detachable from the surrounding tissues. The condition seemed to be one of hyperplasia of the gland tissue, with but little inflammatory alteration, and just such as might be produced by a continuation of tissue-production of a somewhat degenerated type, with a coincident cessation of effete tissue absorption.[1]

The patients were generally anæmic girls of from ten to twenty years of age, and generally of the so-called beautiful strumous type, but in the vast majority of cases there was no detectable organic disease. These cases are most favorable for operation, not only on account of the facility of removal, but also from the rarity of recurrence.

In the second variety a large proportion of the glands belonging to the group were affected, each gland being of moderate dimensions, varying in size from a bean to a hazel nut, separated from its neighbours, but usually closely adherent to the surrounding tissues; firm and fibrous on section, sometimes caseous in the centre, but more frequently either quite solid or quite broken down into pus.

In cases of this category, as well as in those of the third variety, there was not unfrequently a formation of abscess fistula, or ulcer.

In the third variety all the glands in the group or in a portion of the group were affected, forming by their conglomeration a huge, more or less immoveable mass, the condition of each individual gland being similar to those of the preceding variety.

These masses of conglomerated glands frequently occupied the whole side of the neck, extending from the mastoid process to the sternum, and from the larynx to the trapezius muscle, forming a tumour two, three, or even four inches in thickness. The individual glands were closely united together and to the surrounding tissues, including in the mass formed by their union some or all of the important structures of the neck, from the carotid artery to the sympathetic nerve. In the cases of the second and third varieties the changes were much more distinctly inflammatory, consisting chiefly in the deposit in the

[1] It is much to be regretted that stress of work prevented any microscopical examination.

gland and its capsule of inflammatory products, plastic, fibrous, or purulent, the only difference between the two varieties being that in the second the various glands were affected one after the other at prolonged intervals, while in the third the changes occurred in all the glands simultaneously.

From the surgical point of view, cases of the second category are easily removed by operation, but there is naturally much more chance of recurrence; whereas in the third category the complete extirpation of the mass may constitute one of the most difficult of surgical operations, but if radically performed there is little fear of recurrence.

As regards ætiology little need be said, the predisposing cause being either a strumous constitution or imperfect hygienic conditions, many of the cases occurring in girls who have been brought up in the seclusion of the harem. As already noticed, the hyperplastic variety is seen much more frequently in patients of the so-called beautiful strumous type, the two other varieties occurring specially in those of the ugly type. The exciting cause is, in the very great majority of cases, vermin. It is most uncommon to see a woman or child of the lower classes whose head is free from lice, only excepting those who are suffering, or have suffered, from extensive favus. The men and boys, who have their heads frequently shaved, are free from lice and from enlarged glands. The extreme dirtiness of the true Egyptian peasant girl is due to the fact that no girl, who has any respect for her reputation, will in any way wash herself from the earliest age of puberty until the day preceding her marriage; cleanliness and its attendant increase of attractiveness being looked upon as a sure indication of laxity of morals.

Considering the extent and severity of the disease as shown by the preceding remarks, it was evident that some thorough form of treatment is necessary; for, even leaving out altogether the question of the tubercular nature of the enlargement and its effects of the organism generally, it is evident that the mere local condition is quite sufficient to require vigorous measures.

The question arose at once, should the plan of treatment to be pursued be medical or surgical in character? As a certain pre-existing surgical bias rendered it very difficult to decide

fairly between the two methods, it was decided to employ exclusively during three months the various remedies recommended in medical works.

Some sixty cases, all of whom were in-patients, were treated with almost every drug that has a reputation for the cure of the disease. Iron, arsenic, cod-liver oil, glycerine, mercury, quinine, sarsaparilla, guaiacum, turpentine, iodides, sulphides, phosphates, hypophosphites, and phosphorus were given internally ; while iodine, mercury, belladonna, camphor, iodide of lead, sulphides, turpentine, cod-liver oil, chlorides, bromides, and iodides of the various alkalies, and alkaline earths were all tried externally and tried continuously. In addition, the glands were subjected to every variety of physical force, statical (pressure), dynamical (massage), thermic (dry and moist heat and ice), acoustic,[1] and electrical (constant currents up to 30 milliampères), while combined heat and light were applied, as recommended by some Indian authorities, by exposal to the direct rays of the tropical sun.

At the same time every attention was paid, as far as the circumstances allowed, to their food and hygienic conditions. Ten of them were sent down to a hospital situated on Lake Timsah (a large inland sea forming part of the Suez Canal, and surrounded by desert). In all cases the primary seat of irritation was as far as possible removed. The result was most disheartening; although the general health of the patients improved greatly, in no single case did the enlarged glands disappear. The various surgical methods of treatment were then considered—scraping, crushing, injection with iodine, thermo-puncture, and excision ; and it was decided to try what seemed the surest, quickest, and most generally applicable method, viz. that of excision.

From the time when this decision was arrived at up to now, over 1000 cases have been operated on. Of these, five cases have died—one from secondary hæmorrhage from the external carotid, one from dyspnœa and cardiac failure after division of the pneumogastric nerve, and three from shock and exhaustion. The other cases have left the hospital cured, but it is

[1] The acoustic method of treatment had been so thoroughly carried out by the native physicians outside the hospital in the form of incantations, that no further trial of this method was considered necessary.

difficult to form any opinion as to the percentage of cases in which there has been recurrence.

It must be borne in mind, however, that the operation if thoroughly carried out is sometimes one of some danger, requiring care, patience, and determination on the part of the operator. In cases of the first category the operation is of the simplest, the gland being merely shelled out.

In cases of the second category the operation is somewhat more important; the following is a typical case.

Case 1.—Male Egyptian, æt. 9, good general health, had suffered from enlarged lymphatic glands in the left cervical region for at least eight months. Five glands could be felt just beneath the fascia, situated between the sterno-mastoideus and the trapezius, each gland being movable, painless, and firm to the touch. Other glands could be felt among the deeper tissues, probably ten to fifteen in number. An incision four inches long was made along the posterior border of the sterno-mastoideus in its middle three quarters; and from the lower extremity of this a second incision inclined downwards and backwards to near the border of the trapezius, the two incisions being arranged so as to include between them the affected glands, and at the same time to leave as large a base as possible to the flap. The included skin was turned outwards as far as the trapezius, together with the fascia and platysma muscle. The external jugular vein was tied and divided, and then each gland exposed and dissected out, first those lying superficially and then those among the deeper tissues. The greatest care was taken to search for and remove every gland that showed any signs of enlargement, and in the course of the dissection the carotid vessels were freely exposed.

The wound was closed with wire and catgut sutures, a small drainage-tube inserted, and a large cotton-wool dressing applied. On the seventh day the wound was healed.

The following is an operation of the severest type for conglomerate masses of glands.

Case 2.—Female Egyptian, æt. 25, had suffered three years from enlarged glands on both sides of neck and in right

axilla. General health good. On the right side of the neck was a mass the size of a large fist, occupying nearly the whole of the posterior triangle, and standing out two inches beyond the level of the neck. It was evidently composed of multiple enlarged lymphatic glands, none of which gave any evidence of suppuration. An incision was made along the anterior border of the sterno-mastoideus from mastoid process to within two inches of the sternum, and from the lower end of this incision a second sloping down to the junction of the middle and outer third of the clavicle. The included flap was turned back with fascia and platysma; the external jugular vein was divided and tied.

The more superficial glands were easily removed, exposing the deeper ones, which were similarly treated. In order to get at those beneath the sterno-mastoideus, the muscle had to be strongly retracted towards the middle line and a few fibres divided. It then became evident that the mass entirely surrounded the carotid vessels and the pneumogastric nerve. The component glands were then carefully separated until the sheath of the vessels was exposed and opened; the artery, vein, and pneumogastric nerve were then separated from the tumour with every precaution. The sympathetic was then sought for and carefully put aside, as also the phrenic. The spinal accessory was intentionally divided, and after two hours and a half of careful dissection the whole mass was removed, the last important structures from which it had to be separated being the parotid gland above and the apex of the lung below. The wound was cleaned, closed, and drained, and a very large cotton-wool dressing applied. On the fourth day the stitches were removed; on the sixth day the wound was healed. Twenty days later the other side of the neck was operated on, two weeks later still the axilla, and the patient finally left the hospital free from all glandular enlargement.

Operations of this severity are rare, forming perhaps 3 to 4 per cent. of the total number, but it is not always possible to foretell to what extent the dissection has to be carried out, and in most cases it is fairly extensive.

The skin incision must be very free, and it is generally most convenient to turn back a flap as described. Care must

be taken to have the attached base of the flap as large as possible. In most cases the external jugular vein has to be divided early in the operation. In the majority of cases either the sheath of the carotid vessels or the vessels themselves have to be dissected off the glandular masses. The descendens noni nerve is often seen, the phrenic much more rarely, and must be most carefully avoided. In a very small percentage of cases the pneumogastric is exposed, and in such cases the greatest care must be taken to avoid injuring it. Apparently the division of this nerve is necessarily fatal.

Case 3.—Female Egyptian, æt. 23, had been operated on six months previously; from her account this operation had probably been partial, as the tumour was still evident when the dressings were removed. From that time the tumour had continually increased. A large solid mass five inches long by three wide, and about two inches thick, was situated partly beneath and partly internal to the sterno-mastoideus. It was adherent to the skin along the line of a cicatrix, and was not fixed to the deeper tissues.

The usual triangular flap having been raised, it was found that the glands composing the mass were so firmly united together as to render their separate removal impossible. A small exploratory dissection on the under surface of the mass showed that it was quite free, and it was decided to attempt its removal as a whole. Dissection was then commenced at the upper end of the tumour, and after a few strokes of the scalpel smart bleeding occurred from a vessel lying on the front of the tumour. The vessel was at once caught and tied, and appeared to be certainly smaller than a normal facial artery, and was taken to be a branch of the sterno-mastoid or thyroid artery. Shortly afterwards a vein, apparently accompanying the artery and of no great calibre, had to be tied in two places and divided. The dissection was then proceeded with, and the tumour removed without much difficulty. The wound was sewn up and the patient put to bed. Towards the latter part of the operation doubts were felt as to the identity of the artery which had been divided; and when on removing the tumour no trace could be found of a carotid artery or jugular vein, it seemed almost conclusive that the vessels tied

on the front of the growth had been the trunks in question displaced by a tumour growing from beneath them and diminished in calibre from pressure or other causes. The chloroformist had noticed no bad symptoms during the operation, and therefore it was hoped that the pneumogastric nerve had escaped. The patient was, however, placed in a special ward, and a steam kettle set going at once.

Twenty minutes after operation the pulse was 106 and the respirations 17, full and deep; the face, although pale, was in no ways cyanosed; the pupils equal and dilated. Forty minutes after operation the effects of the chloroform were passing off and the patient was fairly rational, pulse 120; breathing 14 to the minute, with a distinct pause after a slow, deep inspiration and quick expiration; pupil and face unchanged. One hour after operation the pulse was 140, and the respirations 11; face and pupil unchanged. From this time until five hours after operation the pulse remained the same, the respirations varied between 7 and 10 per minute, their character remaining as before.

The face had then become distinctly cyanosed, and the patient was restless and complaining of want of air. On stethoscopical examination both lungs were found to be acting, and no pneumonic sounds could be heard, but there was a little crepitation, probably due to the chloroform. As a last chance tracheotomy was performed, artificial respiration kept up, and small repeated doses of brandy and ether given. The pulse gradually increased in rapidity until it became uncountable, the breathing ceasing entirely whenever the artificial respiration was interrupted, and death occurred fourteen hours after operation. No post-mortem was allowed, but it was evident from these symptoms that the pneumogastric had been cut. The tumour proved on microscopical examination to be a sarcoma of the lymphatic glands.

The spinal accessory nerve is exposed in nearly all the dissections of the posterior triangle, and may, if necessary, be divided without apprehension. This nerve has been divided in over fifty cases, and although most careful search was made for symptoms due to its division none could ever be found. This is probably due to the fact that all parts to which it is distributed have alternative nerve supplies.

In two cases the internal jugular vein had to be tied in two places and divided, on both occasions without bad results. In three cases the vein was wounded, and the apertures closed with a fine catgut ligature.

The avoidance of the large veins is one of the most important points of the operation. It is often necessary to draw strongly upon a gland in order to facilitate its dissection from the deeper tissues; and at such times a vein, even be it the internal jugular, will, from the traction, take on the appearance of a piece of fascia, the blood being almost completely expressed, and the vein flattened to a tape. In most cases a close attention to the dissection will prevent accidents. The capsule of the gland should always be first exposed, and then carefully separated with either the point or handle of the knife from the surrounding tissues. In two cases the common carotid artery had to be divided. The following case is worthy of note.

A child aged five years, suffering from an enormous glandular tumour of the right side of the neck, was operated on in the usual way. As the common carotid artery was too intimately connected with the tumour to be dissected off, it was tied in two places and the included portion excised. The wound was closed and the dressings left untouched till the fifth day.

While the dressings were being removed the child cried lustily, and blood was seen to ooze from between the lips of the wound. Almost immediately the region of the wound swelled up and commenced to pulsate. As the swelling reached to the clavicle, compression was impossible. One stroke of the scissors cut all the sutures, one squirt of blood issued with a distinct whiz, and then a thumb firmly applied in the wound controlled all bleeding until instruments had been provided and chloroform administered. The child went out cured a few weeks later.

In three cases the dissection has reached the apex of the pleura, care being taken to avoid its injury; in one most remarkable case the extreme tip of the lung, with a caseous tubercular mass situated in it, was removed after ligature, together with the adherent pleura.

It frequently happens that the submaxillary gland or the

lower extremity of the parotid is mistaken for an enlarged lymphatic gland, but the mistake is generally realised before the dissection has been carried very far, the difference between the smooth uniform surface of the latter and the lobular formation of the former being very evident.

It is most important to avoid division of the sterno-mastoid muscle if possible. In those cases in which there are large masses on either side of it, it is much better to make two operations, in the one cleaning out the anterior and in the other the posterior triangle. In cases in which nearly all the mass is situated on one side of the muscle it is sufficient to separate the muscle from the surrounding tissues, and to draw it well aside. In two of the cases in which it was divided there subsequently occurred marked torticollis.

The reparative powers of the tissues of the neck are very great. Even after the most extensive dissections the healing is, in the vast majority of cases, by first intention.

Great attention must be paid to drainage, especially of the pockets which are often left, and the edges of the wound must be very carefully united. In nearly every case silver wire and catgut suture were used alternately, the wound was dressed with sublimated cotton wool and a little iodoform, and, unless oozing occurred, it was left untouched for four days. In the case of children, immobility of the parts was in many cases obtained by flexing the arm over the top of the head and securing it in that position with strapping. In the case of adults, well-applied pressure with plenty of cotton wool and bandaging is sufficient to ensure the necessary rest.

In the whole of the thousand operations there was no single case of pyæmia or septicæmia; and only two cases of erysipelas, in both of which the infection was traced to a dresser.

One very important consideration remains, that of the cicatrix necessarily left after such extensive operations. In order to obtain really good results, great attention must be given to two or three points. First, to entirely remove all diseased tissue, whether glandular or tegmental, and especially all ulcerated or chronically inflamed skin, as well as that blue and undermined skin which so frequently accompanies fistulæ of strumous origin. It is remarkable how much skin may be

taken from the neck without apparent loss; as much as two or three square inches has been removed in some cases. Secondly, to unite the edges of the wound very carefully, and to remove the stitches early, at the latest on the fourth day. Thirdly, to use small drainage-tubes, and to remove them after twenty-four or forty-eight hours.

If these points are attended to, the cicatrix is, in most cases, linear, and, six or nine months after operation, becomes pale and almost invisible.

In the case of the axillary glands the conditions are somewhat different. The affected glands are usually very large, reaching often the size of a goose's egg; they are nearly always freely movable, with the exception of those which lie along the axillary vessels.

The operation is usually quite easy. The axilla must be thoroughly laid open, and it will be found that the glands can nearly always be taken away with the fingers from the loose cellular tissue occupying the axillary space. In this way huge masses of glands may be removed very rapidly, but there is nearly always a large cavity left, which it is sometimes very difficult to obliterate by pressure. In such cases it has been found much safer to make an incision in the anterior wall of the axilla, through the pectoralis major, and another one through the posterior wall of the axilla, just at the angle of the scapula, and to pass a large drainage-tube from one to the other, traversing the axillary cavity, and to completely close the axillary wound. In face of the present tendency to minimise the use of drainage-tubes, this proceeding may appear ill-advised and unnecessary. Undoubtedly in cases of spare women, in whom the whole breast has been removed and the axilla cleared out, the wound may be united in its whole extent, and no cavity requiring drainage remain. But where the pectorals and the skin over them remain intact, and where large masses have been removed from the axilla, and where there is the least tendency to corpulency, drainage, even if not absolutely necessary, is a great safeguard. One great advantage of the method of drainage advocated above is that the wound in the axilla may be completely closed, and covered with a small adhesive dressing, which remains untouched until the stitches require to be removed, the external dressing being

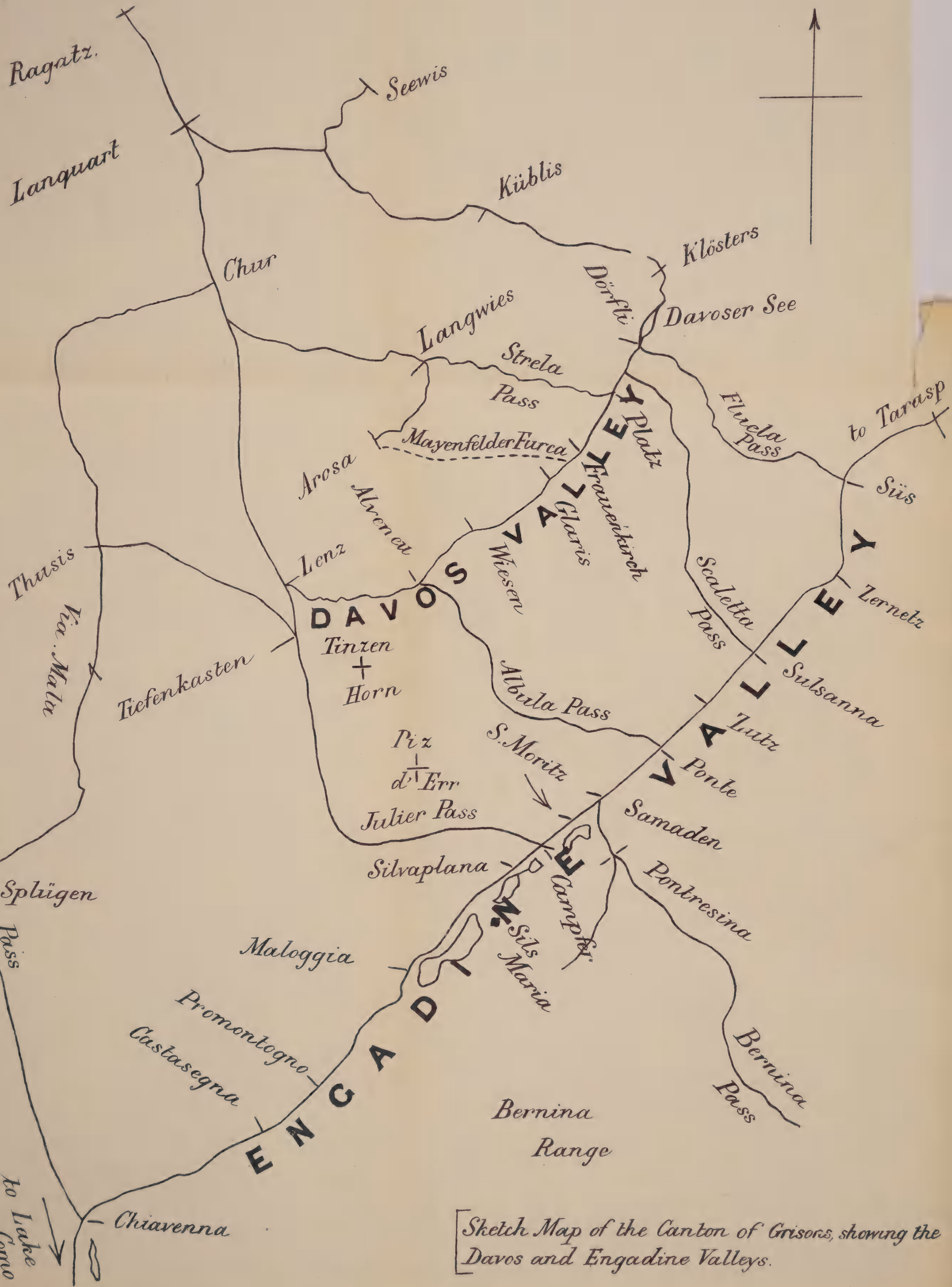
undone on the second day in order to remove the drainage-tube.

In operations of this kind in which there is a freshly made wound of practically healthy soft tissues, the presence of a drainage-tube for forty-eight hours has but little effect on the healing process, either as to its character or its duration, and it is certainly a safeguard against the evil results of any possible imperfection of the operative procedures. In operations for chronic bone and joint diseases, on the other hand, it is quite possible that the mere presence of a drainage-tube may tend to reproduce the previously existing chronic inflammatory condition, which it has been the object of the operation to remove.

The femoral glands are much less frequently affected, and have but seldom to be removed. The operation presents no point of interest, except that care must always be taken to examine the gland in the femoral canal, and if necessary to remove it.

It is much to be regretted that no information can be given as to the percentage of recurrence after operation, but the cases which have remained under observation for a sufficiently long period are so few that any attempt at a conclusion would be worse than useless. One thing is evident, that cases do recur, and in several instances the old wound has been opened up again, and the newly affected glands removed. These secondary operations, owing to the way in which important structures are displaced and bound down, are among the most difficult.

One of the best criterions of the success of this method of treatment is the ever-increasing number of patients who present themselves for operation, and who nearly all enter the hospital stating that they have come to have their glands excised.



Sketch Map of the Canton of Grisons, showing the Davos and Engadine Valleys.

AROSA: A HAMLET IN THE GRISONS, SWITZERLAND.

By ARTHUR FOXWELL, B.A., M.B.Cantab., M.R.C.P.,
PHYSICIAN TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

In the early part of October, 1887, while staying at the Hotel Belvedere, Davos, I walked over the Strela Pass to Langwies, and, after a frugal lunch amidst its primitive prettiness, strolled up through the charming Aroserthal to Arosa. The pathway is a delightful one, running along the wooded western slope of the valley, with a constant view of the lofty and rugged cliffs of the eastern side which were sprinkled with snow and veined with miniature Staubbäche. The whole way is a long gentle ascent through woods and little grass-clad clearings with their lonely châlets. The road itself was merely an ill-kept and muddy pony track, although it is not seldom traversed by sledges and ox-waggons. Indeed, a German lady whom I met at the Brunold told me she came up in a sledge, and was but waiting for suitable weather to return in the same fashion.

After walking for two and a half hours from Langwies, on emerging from swampy footing and a thick belt of pine trees, one suddenly opens out the Seegrube or lower portion of Arosa, which forms half an amphitheatre around the charming little Untersee. On the right, at the margin of the lake, stands the Pension Seehof, 5707 feet, well exposed on all sides to sunshine, but likely to be damp, lying as it does between the Unter- and Ober-seen. Opposite, some hun-

dred feet above one, and a little back from the lake, is the Pension Rothorn, containing the post and telegraph office. To the left, on a level with the Rothorn, but finelier situated, facing north-west across the lakes and also north-east, is the best of the three pensions belonging to the Seegrube, the Waldhaus. All these were closed when I reached Arosa.

Proceeding westwards along the Aroserwasser between the Rothorn and Waldhaus, we reach in some half-mile the Brunold, 6000 feet, with its back against the Tschuggen Mountains and facing almost north. A little further on is the Kurhaus, the brightest and best kept of all, but also closed in winter-time; it lies in an open spot, but has its principal rooms looking south-east against the hill-side.

The Brunold, where I stayed, is of the most unpretending nature, much more resembling a wayside inn than a place for prolonged residence. It is built almost entirely of wood, and is most primitive in arrangement; *e. g.* the closet consists of a flat piece of pine perforated by a central round hole, from which goes down a perpendicular shaft formed by four pine timbers squarely fixed together. This shaft ended in a cesspool, the details of whose construction I could not investigate, as the snow lay somewhat thickly on the ground. I must confess, however, that I discovered no disagreeable odour, although it seemed to bear unaided the whole burden of the Brunold's excrement—and even then, in October, we numbered some dozen souls. But the accommodation, though plain and thoroughly German, was excellent of its kind, and our hosts were full of genial courtesy. I met three German ladies who were intending to winter there, with the phthisical husband of one of them. Last winter two chest invalids had similarly stayed.

A little farther off, and a good deal higher, was a dwelling-house where a resident had constantly lived some two years. He had built the house after having benefited during the previous winter by residing at the Brunold.

The only meteorological statistics I know of concerning Arosa are found in the 'Correspondenz-Blatt für Schweizer Aertze Jahrgeschichte,' xvi, 1886, by Fritz Egger, a Basel student who, with his brother and a friend, all three suffering from phthisis, and an English clergyman who had over-

worked himself, spent the winter of 1885–6 at the Pension Brunold. In brief they are these:

Temperature.—This was taken at 7, 1, and 9 o'clock.

	Nov.	Dec.	Jan.	Feb.
Monthly average recorded .	33° ...	24° ...	20° ...	20° Fahr.
Monthly minimum recorded .	17 ...	4 ...	1·5 ...	0·5 „
Monthly maximum recorded .	45·5 ...	46·5 ...	37 ...	36·5 „

Observations taken hourly for one week showed that the daily variations were, naturally, much less than those recorded above.

At Davos Platz similar observations during the same winter gave the following results:

	Nov.	Dec.	Jan.	Feb.	
Monthly average . .	34·7° ...	24·8° ...	21° ...	23°	Fahr.
Minimum average . .	13·5 ...	3 ...	5 ...	6·5	„
Maximum average . .	52 ...	50·5 ...	45 ...	44·5	„

—from which it would seem that while Arosa is somewhat colder than Davos, yet its variations in temperature are much less, and would more than compensate, from an invalid's point of view, for its extra coldness.

Cloud.—With regard to the amount of cloud, it again seems to possess some advantage over Davos, as the following tables show. The cloudiness is measured in numbers from 0 to 10; anything below 2 is reckoned a clear day; anything above 8 a cloudy one.

	Nov.	Dec.	Jan.	Feb.
Arosa, 1885—1889:				
Clear days, 0—2 . .	12 ...	18 ...	9 ..	16
Cloudy days, 8—10 .	7 ...	6 ...	10 ...	4
Amount = 0—5 . .	18 ...	21 ...	15 ...	21
Amount = 5—10 . .	12 ...	10 ...	16 ...	7
Davos, 1885–6:				
Clear days, 0—2 . .	10 ...	16 ...	10 ...	17
Cloudy days, 8—10 .	4 ...	7 ...	10 ...	5
Amount = 0—5 . .	21 ...	20 ...	17 ...	20
Amount = 5—10 . .	9 ...	11 ...	14 ...	8

Snowfall.—During 1885–6 the days of snowfall were fewer than at Davos, thus:

	Nov.	Dec.	Jan.	Feb.
Arosa, 1885–6:				
Days with snow . .	6 ...	7 ...	6 ...	4
Davos, 1885–6:				
Days with snow . .	7 ...	11 ...	12 ...	8

Wind.—The upper wind occurs very seldom; it either comes as a severe *Föhn*, or as an east wind, *Orkan*.

	Nov.	Dec.	Jan.	Feb.
Arosa, 1885–6:				
Föhn days	1 ...	1 ...	0 ...	0
Orkan days	0 ...	1 ...	2 ...	0
Davos, 1885–6:				
Föhn days	3 ...	1 ...	3 ...	2
North wind days . .	0 ...	1 ...	0 ...	2

In these two tables the north and east winds may be said to balance each other, but Davos is seen to have four and a half times as many Föhn days. This latter is a very notable preponderance, and one affecting not a little the pleasantness of a residence in an Alpine resort. To invalids each day of wind means a day indoors, for wind is far more trying than falling snow; an invalid therefore would have, as regards wind, seven less days out of the 120 for outdoor exercise at Davos than at Arosa.

This is a result, I think, not to be unexpected from an investigation of the topography of the two places. Arosa clusters round two small and deeply set basins at the head of a curving and narrow valley, the lower end of which opens against high mountains. This is Arosa's only outlet, and faces north-east; while throughout the rest of the circle it is completely shut in by the mountain masses of the Rothorn on the south, 9787 feet, with a splendid view from its summit; the Weisshorn, 8708 feet, on the north-west, and the Schiesshorn on the south-east. On the east is the Mayenfelder Furca, a high and rugged pass of 8020 feet, running between the Furkahorn and the Amselfluh, but it is too high to be spoken of in any sense as an exposed point.

With Davos it is very different; this lies right in the course of its valley, some third of the way down it, and only 240 feet below its summit; while the lower or south-south-west end of the valley, instead of abutting against a lofty

mountain mass, opens out into the broad vale between Lenz and Tiefenkasten.

This difference seems to me quite sufficient to account for the greater prevalence of the Föhn in Davos, and therefore enables me to believe that Herr Egger's observations on the prevalence of this wind are not only true for that particular winter, but are true generally.

Mist.—During the winter mist occurred only five or six times, and then lasted but a few hours.

Hours of possible sunshine.—In these shut-in valleys the length of possible sunshine is always short, though the amount of sunshine is great, for the sky is nearly always clear. This short duration makes every extra half-hour of extreme importance, and perhaps of even greater importance still is the time of day which receives the sunshine. Few invalids get out before nine o'clock, so that it matters comparatively little if the sun appear before that hour. With Alpine invalids the midday lunch is a substantial one o'clock meal ; there is not much readiness, therefore, to go out for the afternoon walk before two ; hence the lengthening of the afternoon sunshine by half an hour is of great moment. Thus it is not so much the earliness of the sunrise, but the lateness of its setting, which adds chiefly to the length of day enjoyed by the Alpine invalid.

At Arosa the hours are as follows :

	Sunrise.		Sunset.		Duration of sunshine.
1885—Nov. 3rd .	7.30	...	3.17	...	7.47 hours.
„ 14th .	8.0	...	3.4	...	7.4 „
Dec. 2nd .	8.21	...	2.40	...	6.19 „
„ 16th .	8.46	...	2.19	...	5.33 „
1886—Jan. 4th .	8.46	...	2.45	...	5.59 „
„ 15th .	8.40	...	3.11	...	6.31 „
„ 30th .	8.25	...	3.34	...	7.9 „
Feb. 14th .	8.15	...	4.4	...	7.49 „
Mar. 2nd .	7.59	...	4.21	...	8.22 „
„ 16th .	7.52	...	4.52	...	9 „

St. Moritz :

Dec. 21st .	10	...	3	...	5 „
Jan. 1st .	10	...	3.5	...	5.5 „
Feb. 14th .	7.45	...	3.50	...	8.5 „

	Sunrise.		Sunset.		Duration.
Davos Platz :					
Jan. 1st . .	10.3	...	3	...	4.57 hours.
Davos Dorfli :					
Jan. 1st . .	8.35	...	3.17	...	6.52 „
Wiesen :					
Jan. 1st . .	10.35	...	3.45	...	5.10 „
Maloggia :					
Jan. 1st . .	9.35	...	3.45	...	6.10 „
Feb. 14th . .	9.23	...	4.30	...	7.7 „

The hours of possible sunshine at the following places are—

	Arosa.		Davos Platz.		St. Moritz.		Wiesen.		Maloggia.
Nov. 1st . . .	7.30	...	7.20	...	—	...	7.20	...	7.10
„ 15th . . .	7.2	...	—	...	6	...	—	...	6.45
Dec. 1st . . .	6.20	...	5.15	...	5.15	...	5.15	...	6.30
„ 15th . . .	5.35	...	5.5	...	5.5	...	5.6	...	6.15
Jan. 1st . . .	5.52	...	5	...	5.5	...	5.10	...	6.6
„ 15th . . .	6.31	...	5.30	...	5.20	...	5.50	...	6.20
Feb. 1st . . .	7.10	...	6.20	...	7.5	...	7.15	...	6.50
„ 15th . . .	7.50	...	7.45	...	8.5	...	7.40	...	7.8

From these tables it will be seen that, as regards the mere length of possible sunshine, Arosa is amongst the best, being equal with the Maloggia ; but as regards the earliness of sunset it is worst, this occurring before three o'clock for six or seven weeks in the year. If English invalids wintered at Arosa, they would have to fall in with the different hours of sunshine and get up betimes.

Of the existing hotels in midwinter the Brunold enjoys most sunshine ; somewhat less have the Rothorn, Waldhaus, and Seehof ; whilst the Kurhaus has least, on the shortest days scarcely seeing the sun at all.

Arosa shares the following advantage along with the upper Engadine over Davos, Wiesen, Seewis, and other lower resorts—to wit, the snow melts later on in the year. This is due to its greater altitude, which is 800 feet higher than Davos Platz, 1400 above Wiesen, and just twice the elevation of Seewis. At the first appearance of snow melting the resident at Arosa should flit to Wiesen or Seewis, where he would be sure to find the beauty of spring in its fulness, and

so avoid most of the discomforts and problematical evils of this unpleasant period of the year.

Of Wiesen Dr. Main writes thus, even so early in the year as February 1st :—" The change from St. Moritz seemed as one from winter to spring. The snow is already beginning to disappear fast, and we are able for the first time for some months to resume acquaintance with spongy turf. Seen in brilliant sunshine this gem of the Alps looks now at its very best."

According to the same authority, Herr Christian Palmy, the proprietor at Wiesen, " represents the Swiss hotel keeper at his very best."

If anything, still more favoured in situation, though less as to accommodation and in less romantic scenery, lies Seewis, half an hour's drive from Pardisla, which is a village in the Prättigau four miles from Landquart. Either spot is about equally distant from Arosa. At present one would have to go by sleigh to Langwies, thence by diligence to Chur, and there change into the Davos diligence for Wiesen, or take the train to Pardisla if Seewis were selected. The distances are—Arosa to Langwies eight miles, Langwies to Chur thirteen and a half miles, Chur to Wiesen twenty-three miles and a half, Chur to Seewis from fourteen to sixteen miles and a half by rail.

In the matter of exercise Arosa as yet is not very suitable, the village paths are too steep and ill-kept for the gentle exertions of invalids ; but potentially it is well off in this respect, for many beautiful walks with easy gradients could soon be made along the pine-clad slopes of the Tschuggen. A little wise and comparatively slight labour would enable it to outvie Davos in this respect, for there is an oppressive monotony about the latter which the charmingly varied outline of the hills around Arosa must ever prevent.

To reach Arosa the best way is by Basel and Zurich to Chur, thence by diligence to Langwies, and so by sleigh to Arosa. This sleigh journey could scarcely, I think, be anything but a rough one at the present, unless the long talked-of road be now made. But it is short and beautiful, and rest would come at the end. The invalid should spend the night at Chur ; or, if unable to bear fatigue, at Langwies,

where the Bär, though somewhat primitive, is roomy and clean, and possesses a landlady both capable and obliging.

If this road were made, the journey from England would be considerably easier than to either Davos or St. Moritz, consisting in a short twenty-mile diligence from Chur. Bädeker says in his 1887 Switzerland that it was to be done in 1887, but there was no sign of it in October of that year so far as I could see. Indeed, both at Langwies and Arosa I was told the inhabitants were if anything averse to it, for they made quite enough money in the summer season, and liked to have an idle winter in which to rest and spend their summer gains.

However, in 1887 Arosa was an impossible place for invalid wintering for anyone unable to rough it to a considerable extent. The nearest medical aid, for instance, would have to be obtained from Davos, which is seven hours off along a toilsome footpath over the Strela Pass. But the possibilities of Arosa are great; its climate is one of the best in Alpine Switzerland; the great beauty of the spot is admitted by all, a beauty which one would get to love and feel fond of, not a beauty to oppress one; the existing hotels are substantially built, and if under proper management would suffice quite well for the wants of a modest colony; the late hours and evening entertainments of Davos would be avoided; there would be no danger from overcrowding; and as to a doctor, he would be sure to follow in the wake of patients.

With regard to drainage I am unable to speak, but I should imagine that each proprietor manages his own. This, if the colony grew to any size, would probably have to be altered, but there could be no difficulty in constructing a common drainage system; and at present the individual arrangements are quite sufficient, for it must not be forgotten that Arosa has long been a favourite and much-frequented resort amongst the German Swiss. Indeed, Bädeker tells us to secure rooms in advance to avoid disappointment during the summer season, and that it is coming into favour as a winter resort. This last is exaggeration, for the Brunold alone keeps open after October, and five or six invalids is the largest number that has ever wintered there.

Bibliography.

Bericht über einen Winteraufenthalt in Arosa von Fritz Egger, Separatabdruck a. d. Correspondenz-Blatt für Schweizer Aerzte, Jahrg. xvi, 1886.

Meteorological Observations taken at the Hotel Belvedere, Davos Platz, 1885, 1886, 1887, 1888.

St. Moritz Post, Davos and Maloggia News, 1887, 1888, 1889.

Davoser Wetter Karte von Januar und Juni, 1887.

Davos Platz, W. R. Huggard, M.A., M.D., M.R.C.P., 1886.

Guide to Davos, J. E. Muddock, 1884.

The Winter Climate of Davos, C. Theodore Williams, M.A., M.D.Oxon.

Davos, Illustrated Europe Series, C. Smith and Sons, London.

St. Moritz in the Winter Months, Henry St. Clair Fielden, M.A., 1886.

St. Moritz ; its Climate and its Water, by A. Biermann, M.D. Hitz and Hail, Chur, 1887.

Wiesen als Höhenkurort für Sommer und Winter von Dr. F. Buol, L.R.C.P. of London.

Baedeker's Switzerland, 12th edition, 1887.

Alpine Winter, Tucker Wise, 3rd edition, 1886.

Climatic Treatment of Consumption, J. A. Lindsay, M.A., M.D. Macmillan, 1887.

Climate and Health Resorts, Burney Yeo, edition 1885.

Ziemssen's Therapeutics—Climate, Hermann Weber.

Southern and Swiss Health Resorts, William Marcet, M.D., F.R.S.

Pulmonary Consumption, Dr. C. J. B. and C. T. Williams. Longmans, 1887.

Diseases of the Lungs, R. D. Powell, 3rd edition. Lewis, 1886.

La Phtisie Pulmonaire, par H. Hérard, V. Cornil et V. Hanot, Deuxième Edition. F. Alcan, 1888.

A CASE

OF

SARCOMA OF THE THYROID GLAND.

REMOVAL—REPEATED RECURRENCES, ETC.—DEATH AFTER HÆMORRHAGE FROM THE COMMON CAROTID ARTERY.

By SYDNEY JONES, M.B., F.R.C.S.,
AND
W. H. BATTLE, F.R.C.S.

The account of this case is compiled principally from the notes of Messrs. H. G. Turney and H. C. Bristowe.

H. S., æt. 42, a coachman, was admitted, under the care of Mr. Sydney Jones, into the Albert Ward on June 30th, 1887. He has always been a healthy man, and lived many years in Bath, where he was born. He has had a goitrous enlargement in the neck for many years. There is no history of syphilis.

About five years ago he noticed a hard lump on the right side of the neck, behind the sterno-mastoid, from his description. This lump grew slowly until some months ago, since which it has increased rapidly in size. Till these last months the patient has enjoyed excellent health, and suffered no pain from the tumour. Latterly he has been losing flesh, and his general health has suffered. During the last two or three weeks patient has taken longer about his meals; he has not experienced any definite difficulty in swallowing, but lumps of food were apt to stick and then regurgitate. At night he

sometimes starts up from his sleep in fear of being choked, and on exertion has similar attacks of dyspnœa. He has been an out-patient at another London hospital, but they would not perform any operation for his relief.

On examination the patient is a man of somewhat sallow complexion, but fairly well nourished, presenting a large tumour on the right side of his neck. This tumour extends from the lobule of the ear above almost to the clavicle below.

Anteriorly it reaches nearly to the middle line, and posteriorly to a line drawn vertically down from the mastoid process. Above, it follows the line of the jaw, which, indeed, it seems to overlap. Its shape is roughly quadrilateral; its dimensions nearly six inches from before backwards, and four inches from above downwards. On palpation the tumour appears of moderate hardness; its surface is irregularly lobulated. The skin over it is free and of normal appearance. The swelling is moveable in the horizontal line, and rises and falls during deglution. The larynx is pushed considerably to the left. The external jugular vein, which is dilated, runs over the surface. On the left side of the neck is a soft, diffuse swelling, the superficial veins over which are considerably dilated. The large tumour is separated from the goitrous enlargement thus referred to by a distinct sulcus. The bronchocele itself is soft and fluctuating, and about the size of half an orange. The right carotid can be felt beating to the posterior border of the tumour. The right palpebral fissure is smaller than the left, and the pupil smaller. This condition is of unknown duration. There was no evidence of any disease elsewhere, and the patient expressed himself as very anxious for anything to be done, provided he could get relief.

Accordingly, on July 16th, chloroform having been given, Mr. Sydney Jones operated. A vertical incision was made from the angle of the jaw to the middle of the clavicle, and the opening enlarged by a transverse cut, bisecting the first at right angles, which divided the sterno-mastoid muscle. These flaps were then dissected off the surface of the tumour, which proved to be encapsuled, and then it was dissected out from the parts beneath.

Throughout the operation much difficulty was occasioned by hæmorrhage from the dilated veins and numerous arteries

met with. In addition to this, whenever traction was made on the tumour the patient stopped breathing. The internal jugular vein was found lying in a groove in the posterior part of the tumour, and was lifted off; the carotid artery was somewhat behind. The anterior border of the tumour was found to be adherent to the larynx in its upper part, and to be connected with the cystic thyroid (left lobe) in its lower portion. A ligature was put round this latter attachment, and the tumour cut free. After the removal of the mass the deeper structures of the neck were fully exposed; the pharynx, the larynx, with the thyro-hyoid and crico-thyroid muscles, were visible anteriorly; the jugular vein and common carotid, with its bifurcation, posteriorly. The two ends of the sterno-mastoid were sutured together, two drainage-tubes inserted, and the skin flaps brought together by superficial and deep sutures. Iodoform dressings were applied. Temperature at 8 p.m. 97·4°.

July 7.—This morning the patient complains of some dyspnœa. The wound is looking healthy.

At midday the temperature was 102·2°, and did not again exceed it during his residence in hospital, becoming quite normal on the 14th.

When he left the hospital on August the 6th he was using iodoform ointment to a small unhealed spot in the middle of the mastoid, but was without difficulty in breathing or swallowing.

He was readmitted on the 22nd of October, and remained for twenty-five days.

The wound never quite healed, and continued to discharge. A month ago he had a little inflammatory swelling; this increased in size, and a week ago Mr. Sydney Jones opened it giving exit to a quantity of pus. He has now a tumour the size of an orange over the right side of the larynx; this tumour is slightly ulcerated on the surface, and moves with the larynx in swallowing.

November 2nd.—The patient being under chloroform, Mr. Battle removed this tumour, making incisions as before, there was rather free hæmorrhage, arrested by pressure, artery forceps, and ligatures. The tumour was found to invade the sheath of the carotid and the œsophagus. A catheter was passed into the œsophagus, and this was felt in the wound,

covered by a thin layer of tissue. A large portion of the tumour was removed at the same time, also a small accessory thyroid undergoing hypertrophy.[1] It measured 2 c.m. by 1·3 c.m. After removal of the main mass more of the growth was scraped away, and the wound washed with a solution of chloride of zinc (40 gr. ad ℥j). The edges of the wound were brought together and sutured, a button suture being used in the central part, and dressed with iodoform. During the operation ether vapour, introduced per rectum, was employed to produce anæsthesia.

3rd.—A large amount of sanguineous discharge in the dressings. He had slept well.

11th.—Wound nearly healed, tubes and stitches already removed; takes food well, and is now getting up.

15th.—Dr. Semon kindly made a laryngoscopic examination of the throat, and found that not only was the larynx displaced considerably to the left, but also rotated round its longitudinal axis, so that the glottis instead of being vertical laid almost horizontal. The right vocal cord moved very little with phonation or respiration. There is a distinct inroad of new growth into the right side of the œsophagus, up to and inclusive of the right aryteno-epiglottidean fold. The temperature was normal throughout.

He was readmitted on December 2nd, 1887, and died April 7th, 1888.

On readmission the growth had recurred, and on the right side of the neck was a tumour in the situation of the original disease, discharging large quantities of pus, and presenting a granulating sore the size of a shilling. He complained of a difficulty in swallowing and breathing. The tonsils and uvula were large and hard, leaving a narrow orifice.

December 31st.—Lately patient has been complaining very much of difficulty in breathing, especially at night, during which time he has found it almost impossible to sleep. Has great difficulty in swallowing anything but fluids, and the tumour has been rapidly increasing, the discharging surface uncovered by skin being about the size of half a crown. Yesterday, the patient being under chloroform, tracheotomy was performed. The operation was attended with difficulty,

[1] See 'Trans. Path. Soc.,' 1888, p. 341.

owing to the depth of the trachea, which was also displaced to the left and compressed by the growth. He had a good night's rest, is breathing comfortably, and has a normal temperature.

January 2nd.—Last night he slept very badly, and about 12.30 a.m. had an attack of dyspnœa, for which artificial respiration was required; his condition appeared almost hopeless until he expelled a plug of mucus from the trachea, after which he rapidly improved, and slept quietly for the remainder of the night.

February 14th.—He now breathes comfortably through the tube, but since the last operation the growth has been recurring rapidly; now it is of large size, and has grown beneath the vessels, which are placed just external to the most prominent part of the tumour.

22nd.—Mr. Sydney Jones removed the greater part of the tumour, scraped the base from which it grew, and dressed the wound with a paste of chloride of zinc and sanguinaria. Growth was found beneath and extending to the outer side of the carotid artery. The wound is dressed with carbolic oil on lint.

23rd.—Temperature, p.m., 102°.

24th.—Temperature, a.m., 100°.

26th.—Discharge offensive, sloughs slowly separating. Chlorinated soda lotion applied.

March 14th.—On the 11th the chloride of zinc paste was again applied. The sloughs are now separated, and the growth is again increasing in size. The tracheotomy tube is changed daily.

19th.—Nearly choked during the night by temporary blocking of the tube. It was found impossible to make the patient comfortable with a large-sized Durham's cannula, as it was not long enough, so a piece of large drainage-tube was secured over it, and the tube changed night and morning.

28th.—Mr. Battle "shelled out" the growth again this afternoon; there was a good deal of hæmorrhage, and patient did not take the chloroform well. The surface was scraped, and chloride of zinc paste applied, with iodoform and carbolic oil dressing over it. More marked softening of the tracheal wall was felt, and there was evidently further involvement of

the œsophagus, as proved by passing a gum-elastic bougie through the mouth.

Appearance before last operation.

He continued to progress satisfactorily until 7 a.m. on April 5th, on which date severe hæmorrhage from the neck set in, and he lost a considerable quantity of blood, the bedding and bandages being soaked. This was arrested by pressure on removal of the bandages, but the effect of the bleeding was very marked. He became semi-conscious, pallid, and bloodless in appearance, with a quick feeble pulse, and there was paralysis of the left side of the body. The shock and condition of collapse was so deep that it was necessary to administer stimulants by mouth and rectum before it was considered

advisable to do anything further. A watch of dressers was set, and at 12.45 Mr. Battle ligatured the common carotid. It was found that renewed growth had taken place, so as to interfere with all attempts to apply a ligature from the inner side, so the wire écraseur was employed, and a large piece of this removed. On the removal of this portion of the growth the carotid was found in the outer wall of the cavity, lying in it and exposed for some three to four inches, but level with the surrounding tissues and, like them, covered with granulations; it was, moreover, much softened wherever exposed. There was an opening in its middle. Accordingly, an incision was made from within, outwards, through the skin and covering tissues, at right angles to the long axis of the neck, and the opening in the carotid exposed by extension of the transverse incision and dissection of flaps upwards and downwards. The outer surface of the vessel was exposed with a scalpel, and then the complete vessel, which was matted to surrounding parts, cleared with a sharp-pointed director, and silk ligatures applied, an inch above and one and a half inches below the opening, where the coats did not appear softened, and the artery divided between. Nothing was seen of the internal jugular vein or of the pneumogastric nerve. Pieces of the artery came away in the forceps, and although not satisfied with the condition of the artery at the point to which the lower ligature was applied, it was not considered advisable to prolong the operation further, the condition of collapse being so severe. The sarcomatous growth removed had a very offensive smell.

At 11 p.m.—He had slept a good deal during the day. Pulse 120. Strength improved. Respiration 22. Much more colour in lips and face. The left arm remains motionless, but he gives signs of intelligence, and moves the right arm and leg frequently, being somewhat restless. Milk and brandy, which are given at intervals, have to be given very slowly.

April 6th, 8.30 a.m.—Fairly quiet during the last four hours; food administered by means of the nasal tube, he having no power of swallowing. Pulse 130; resp. 21; temp. 100·4°.

11 a.m.—Respiration laboured and noisy. Urine passed involuntarily.

9 p.m.—Resp. 30. Fed by the nose with a fluid consisting of two ounces of milk, one of beef tea, one of brandy, an egg, and a teaspoonful of liquor pancreaticus.

At 7.30 p.m. and 9.15 attacks of laboured breathing.

10 p.m.—Right pupil the larger, inactive to light, could open the right eye as well as the left. Temp. 105·4°.

11 p.m.—Resp. 40, quiet. Pulse 116.

April 7th, 1 a.m.—Quite unconscious, eyes closed. Respiration very noisy at times. Movements of right arm frequent, but right leg seldom moved. Resp. 46. Pulse 148. Expiration became more laboured. Respiration increased to 52, pulse 156, and the temperature steadily rose, being 106° at 2.30 a.m., 107° at 4 a.m., and 107·6° at 8 a.m.; about half an hour after, death.

At the post-mortem examination held on April 9th, by Dr. Hadden :—

On the right side of the neck, from a point two inches below the ramus of the lower jaw to nearly the level of the clavicle, the skin was wanting; a large, dirty-looking, irregular mass, apparently attached to the trachea and larynx, was seen and there was a tracheotomy wound in the trachea.

Some enlarged and infiltrated cervical glands were seen. Lungs œdematous. Liver, kidneys, spleen, pale but normal. Brain surface generally pale, but large vessels on the convex aspect injected. The main trunk of the right middle cerebral artery contained a partially adherent and decolourised clot, extending along the vessel for an inch or more. No distinct embolus was made out. The white matter of the right hemisphere was soft and of a faint yellow tinge, with patches of pink injection. The central nuclei were perhaps a little softer than those on the left side.

Mr. Shattock writes (loc. cit.) :—"The new growth passes posteriorly beyond the middle line and meets the left lobe of the thyroid, which is, however, easily separable from it by dissection. The pharynx and œsophagus are displaced towards the left, and partly filled, partly compressed by the tumour; the common carotid passes into its substance. Anteriorly the growth covers the mid-line and invades the adjoining part of the left lobe of the thyroid.

"In regard to the left lobe itself, the upper, lower, anterior,

and posterior limits are readily defined by dissection; the lobe measures two and a half inches in length, is lobulated externally, and its section presents to the naked eye the normal structure. . . . There were no secondary growths in any of the internal organs. The tumour retained throughout its course the microscopical characters of a typical spindle-celled sarcoma," &c.

We have given the account almost in full because of the rarity of sarcoma of the thyroid gland, and for the extent of operative treatment required. The growth in this case was a spindle-celled one, and at the death of the patient there were only local manifestations of it. None of the internal organs were affected. Death followed as the result of pressure, not as the result of infiltration. The local malignancy was great, the general malignancy *nil*.

In the first instance the question arose as to the nature of the disease, and its characters and history pointed to the implantation of some malignant growth on a chronic enlargement of the thyroid; and that as a primary deposit in the gland, not secondary to disease of the œsophagus or other parts. How far a previous goitrous enlargement may predispose to malignant disease of the thyroid it is difficult to say, but it is said to be more common in Switzerland, where disease of the thyroid is so frequently met with, than it is in this country; and the larger number of patients with malignant disease give a history of some previous enlargement of a peculiar character, which has been followed by increased localised growth on one or other side of the neck. This presents, however, a firmer consistency, and grows with greater rapidity; more rarely it has appeared as a general infiltration of the gland.

Considering the deep attachments of this growth, the way in which it had displaced and probably intervened between the structures, which are so numerous and important in that part of the body, and the probable complete involvement of the sympathetic nerve in the neck by it, as evidenced by the small pupil on that side (a circumstance which had induced other surgeons at another hospital to refuse operation), the question of removal was a serious one, without considering

the size of the tumour itself. It was, however, thought right to attempt to take away the disease; though unusually painless, it was increasing rather quickly in size, and already produced symptoms which indicated an early death by asphyxia. So much dread had the patient of this fate that he was willing to run any risk likely to give him a chance of escape from such a mode of death. The result was that although the operations were severe (the first one especially so), and the obstacles to partial removal numerous, they proved not to be insuperable; and notwithstanding rapid recurrence, life was prolonged with some comfort for months. He would ask for an operation in the later stages of the disease, having found such relief from them.

It is not necessary to say much about the operations. The first was prolonged, and proved a very serious undertaking. When the disease recurred, although infiltrating posteriorly, it grew chiefly forwards, stretching, but not invading, the parts immediately surrounding; and after division of the skin it was possible to shell out most of the tumour without excessive hæmorrhage.

In malignant disease of the thyroid the trachea is involved in one of two ways—by a general invasion of its walls, or by the extension through them of a more localised part of growth, followed by the appearance of a tumour inside. In this case the second of these obtained; and it is probable that but for the device of the rubber tube, which passed well beyond the growth, and also wore down its more prominent part, death might have occurred after all by asphyxia, not caused by mechanical pressure but by direct extension of the growth, although tracheotomy had been performed.

The œsophagus is less frequently invaded. Most frequently the vessels are surrounded and infiltrated, and one way in which death occurs is by hæmorrhage into the growth. But in this case the prolonged pressure to which the carotid wall was exposed had no doubt produced inflammatory and degenerative changes in it, and the risk of hæmorrhage was recognised as great, for at each operation the thinned wall could be felt pulsating ominously. The final outburst was, however, hastened by the septic condition of the wound which had existed during the days immediately preceding the hæmorrhage.

The method of reaching the carotid by a transverse incision was an unusual one, but the impossibility of applying the ligatures from the inner side after the growth had been removed was evident; it was difficult any way, and this method appeared to be most expeditious.

It will be also noted that the hemiplegia came on directly after the hæmorrhage, from anæmia of that side of the brain, making it probable that no circulation was possible through that carotid from the presence of a clot completely obstructing its channel—much, in fact, the effect so often seen after ligature of that artery in its continuity. In this instance there was no question that the hæmorrhage was arterial from a large vessel, and that probably the common carotid. The line of treatment was therefore clear to ligature above and below the opening, where the artery appeared fairly sound. Hæmorrhage from the common carotid is, however, a very fatal occurrence, even though the artery be successfully tied.

Pilz gives 335 cases in which the operation was performed for hæmorrhage, with a mortality of 51 per cent. During the American war 81 out of 116 died. Nunn's statistics give a mortality of 50 per cent.; and those of Fischer, a mortality of 66 per cent.

The question as to the likelihood of the development of myxœdema in cases of malignant disease of the thyroid gland must be answered in the negative. In the majority the course of the disease is too rapid to permit of it, and few of those growths which are of less malignancy affect the whole of the gland; there is a working part left, or possibly, as in this case, an accessory thyroid. In searching for evidence on the subject of myxœdema we have met with a case of much interest recorded by Dr. Solis Cohen,[1] a case of sarcoma in which the duration of life was unusually prolonged. A man, aged 45, came under treatment in July, 1887, complaining of a swollen neck; he had then dyspnœa, right-sided ptosis and contracted iris, abnormal warmth of the same side of the face, with frequent perspirations of the neck and face. There had been enlargement of the thyroid for some years. Unilateral tonic spasm of laryngeal muscles, intermittent clonic spasm

[1] 'New York Med. Journ.,' vol. ii, 1889, p. 146.

of the opposite side; then compression stenosis developed. Tracheotomy was performed. Hæmorrhage from the gland came on twenty months later. Pressure on the left sympathetic nerve followed. Ultimately death occurred from disturbance of the functions of the two pneumo-gastrics.

A CASE

OF

HYPERTROPHIC CIRRHOSIS OF THE LIVER

WITH JAUNDICE,

AND REMARKS UPON PROLONGED OBSTRUCTION OF THE COMMON BILE-DUCT AS A CAUSE OF CIRRHOSIS.

By SEYMOUR J. SHARKEY, M.D., F.R.C.P.

S. B—, clerk, æt. 20, was admitted into St. Thomas's Hospital, under the care of Dr. Ord, on March 12th, 1888, and died on April 20th, 1888.

There was nothing of importance in his family history except that his mother was said to have had jaundice due to gall-stones. The patient had suffered for two or three years from dyspepsia, and for five or six years from occasional acute pain in stomach. He had never had syphilis, and had never been in the tropics. For six months he had been jaundiced, the discoloration having commenced with a fortnight's diarrhœa. The patient said he had noticed a swelling over liver, but no tenderness. No loss of appetite.

On admission, the skin was found to be dry and jaundiced, and the conjunctivæ yellow. Temperature 98° F., pulse 68, tense, tongue slightly furred. No sign of chest disease. Projecting from below right costal margin was a rounded swelling moving with respiration. It was about as large as

an orange, smooth and firm, and presented no fluctuation or thrill. It was continuous with the liver. The dulness of the latter organ began above in the usual position, and its edge could be felt half way between the ensiform cartilage and the umbilicus, and on right side on a level with the umbilicus. No tenderness. Spleen not felt. Urine 1022, clear, acid, no albumen. No sugar. Stools colourless.

On April 19th, as patient was suffering from griping pain in abdomen and had not improved, Sir William Mac Cormac performed abdominal section, and found the liver enlarged and hard, and the gall-bladder also large and hard. Some gall-stones were removed from it. The operation lasted three hours, and the patient died next evening.

A post-mortem examination was refused, but a portion of the liver, which was uniformly enlarged, green, hard and smooth, was removed through the wound. The common bile-duct and cystic-duct were found free from obstruction.

Microscopic examination showed that the liver was the seat of advanced cirrhosis of a peculiar kind. It was monolobular and perilobular; that is, the new tissue surrounded individual lobules (fig. 1). From the periphery it gradually invaded the lobules, the liver-cells disappearing before it until in some places the lobule was reduced to the smallest dimensions. But the most striking feature of the disease was the very complicated plexus of bile capillary ducts which existed in the interlobular connective tissue. This is very well reproduced in fig. 1. The epithelium lining these tubes was of an intermediate kind, not columnar and not flat, but something between the two. These ducts could be easily seen running into the margin of the lobules, and there seemed to me to be no doubt that their lining epithelium was simply a transformation of the liver-cells. Fig. 2 represents a spot where this appears to be pretty certainly the case, the lining cells of the duct being continuous with the rows of liver cells. Professor Greenfield of Edinburgh has traced and pictured the same transformation occurring in the livers of cats which were affected with cirrhosis, and there seems to be no doubt that the same thing occurs in man. In this disease there is, therefore, a degradation of the liver-cells from the high physiological position which they occupy in health to the lower level

of epithelium lining an excretory duct. The disease in the case I am now describing corresponds exactly with that which Charcot has called "Hypertrophic cirrhosis with jaundice." It may be said by some that the case was in all probability one of obstruction of the bile-duct by calculi, and that the cirrhosis was caused by this. I do not, however, think this view at all a likely one, firstly because the bile-ducts were quite patent and showed no evidence of having ever been obstructed. Secondly, because there is no necessity for presupposing any such obstruction, as cirrhosis with the anotomy I have described is well known, and is found where there certainly has been no obstruction of the bile-ducts. Victor Hanot published in 1876 a paper entitled "Étude sur une forme de Cirrhose Hypertrophique du Foie (Cirrhose hypertrophique avec Ictère chronique)." He collected fifteen cases, and in one of these gall-stones were present in the gall-bladder. But as there was no evidence that the ducts had ever been obstructed, he looked upon the gall-stones as an accidental complication, as I look upon them in the present case. Thirdly, I am very doubtful whether obstruction by gall-stones does give rise to any such cirrhosis as was present in my case ; whether, in fact, obstruction of the common bile-duct from any cause (except experimental ligature) gives rise to well-marked cirrhosis. My reasons for this doubt will be developed in the further course of this paper.

The peculiarities which serve to distinguish the affection termed hypertrophic cirrhosis with jaundice from other forms of cirrhosis are :

1. Permanent and generally marked increase in the size of the liver.
2. The presence of a meshwork of bile-ducts in the interlobular connective tissue which is in excess of anything which is found in other classes of cirrhosis.
3. Habitual presence of jaundice.
4. Absence of ascites.
5. Long duration of the disease, sometimes six or seven years.

The disease in question is, in my opinion, a rare one; and yet if it were due to an obstruction of the large bile-ducts, it should not be uncommon. Now, Charcot asserts that a similar

condition of liver is produced by obstruction of the common bile-duct by calculi, and indeed by any other cause, the difference simply being that the cirrhosis starts from the larger bile-ducts, while in hypertrophic cirrhosis it starts from the interlobular ducts. After describing the extreme cirrhosis which follows the experimental ligature of the common bile-duct in animals, he says: "Or, nous nous sommes assurés, dans plusieurs cas d'oblitération du canal cholédoque par des calculs chez l'homme, que les choses, à cet égard, se passent comme chez les animaux auxquels on a pratiqué la ligature." He also says that all the results of biliary obstruction by calculi may be produced by obstruction from whatever cause.

Dr. Wickham Legg writes as follows in a paper in the 'British Medical Journal' in 1874:—"In all cases of long-continued obstruction to the bile-ducts, the connective tissue grows. The starting point of this overgrowth is the place of obstruction itself, and the degree of overgrowth depends upon the kind of obstruction. Thus the overgrowth is greatest in animals around whose bile-ducts a ligature has been placed. Here the pressure of the ligature, and the accompanying disturbance of all the structures in the porta of the liver, cause a rapid and enormous overgrowth of the connective tissue throughout the whole of the gland. In such cases I have found, on the fourteenth day after ligaturing the ducts, the most intense cirrhosis, so that the liver substance seemed made up chiefly of connective tissue with a few dwindled hepatic cells. On the other hand, if the obstruction be such that the connective tissue around the bile-duct suffers but little, the increase in the connective tissue is also but slight."

"In one of these cases, in which it would appear that the obstruction from the gall-stone was not complete, if the absence of jaundice be taken as evidence on this count, I yet found the connective tissue throughout the liver greatly increased, and containing many new lymphatic elements, so that, at first sight, the section of the liver seen under the microscope very strongly recalled a far advanced cirrhosis."

Fagge writes as follows in his work on medicine:—"The connective tissue in the portal canals becomes thickened when the common bile-duct is obstructed. This has lately been dwelt upon by Dr. Wickham Legg, who has shown that in

animals the operation of ligaturing the bile-duct is quickly followed by an overgrowth of connective tissue as great as in intense cirrhosis. My observations lead me to believe that a similar change occurs very frequently in cases of obstructive jaundice in man, although not to the same degree."

It appears, then, from the quotations that I have given, no less than from remarks which one not infrequently hears from medical men upon this subject, that it has become a current belief that serious cirrhosis of the liver results from permanent obstruction of the bile-ducts in man. This view has, no doubt, gained acceptance very largely on account of the rapid cirrhosis which has been found to supervene when the common bile-duct in animals has been ligatured. But this operation is not quite comparable with obstruction of the bile-duct as it occurs in disease in man; for the ligature, being applied around the duct externally, directly involves the connective tissue which is continuous with that which exists in the interior of the organ. For many years I have been watching the cases which have come under my notice in the post-mortem room at St. Thomas's Hospital, with a view to determining whether the results obtained experimentally in animals occur also in man. Unfortunately, I have not met with a case of long-continued jaundice due to obstruction by a calculus, but I have examined microscopically a good many livers in which the common bile-duct has been permanently obstructed by other means. In not one of these have I found marked cirrhosis. I do not mean by this that the interlobular spaces have presented absolutely healthy connective tissue, but that there was no increase in it which could be looked upon as of any serious pathological significance. There may often exist, especially where suppuration has been present in the ducts, an excess of leucocytes in the interlobular spaces, and even what might deserve the name of miliary abscesses have been present in such cases. But I have never found what would be called well-marked cirrhosis. There is generally a copious deposit of bile pigment in many of the liver-cells, and the latter are often blurred and stain badly.

In considering this question we must always bear in mind that gall-stones are of very frequent occurrence, without their ever giving rise to obstruction of the ducts; and they

may occur, and frequently do occur, in cases of alcoholic cirrhosis, where they cannot be supposed to have caused this condition. The mere presence of gall-stones in cases of cirrhosis is not sufficient to prove any causal connection between them and the cirrhosis.

Volkmann, in the 'Sammlung klinisches Vorträge,' 1875—1880, quotes O. Wyss as having distinctly given his opinion (Virchow's 'Archiv,' 35) that in long-continued jaundice the connective tissue of the liver is not increased. My own experience leads me to the conclusion that in chronic obstructive jaundice, due to various causes, nothing worthy of the name of cirrhosis is produced. As I have already remarked, I am unable to say anything about the liver in obstruction due to gall-stones, as I have not had the opportunity of making a post-mortem examination in such a case.

I shall now give a few examples of cases which I have observed in which cirrhosis was not produced by the biliary obstruction.

Case 1.—W. J—, æt. 70, was admitted into St. Thomas's Hospital, under the care of Dr. Bristowe, on January 7th, 1880, and died on March 11th, 1880. There was nothing of importance in his own or in his family history. He had not been feeling very well since the previous July, but began to be more definitely ill about three months ago. His principal symptoms had been more or less pain in right side, constipation, rapid loss of flesh, and jaundice. The latter was noticed three months ago, when his motions were light and his urine dark coloured; his weight diminished from 11 st. to 8 st. $6\frac{1}{4}$ lbs. He had never suffered from vomiting or hæmatemesis.

On admission he was found to be very thin and deeply jaundiced. He had constant pain in abdomen, which increased paroxysmally from one to two hours after meals. He had no vomiting; his motions were clay-coloured, his abdomen sunken and tender to pressure everywhere, but especially so in epigastric and right hypochondriac regions.

The liver dulness extended from the sixth rib in the right mammary line to a point three inches below the ribs, measuring altogether seven inches. A distinct nodule could be felt

projecting from its lower edge just to the right of the rectus muscle. There was no ascites. Urine had sp. gr. 1013, was mahogany-coloured, contained bile but no albumen. Spleen not enlarged; lungs healthy; pulse 52, regular; arteries rather hard; heart normal. Temp. 97·7°.

He became gradually weaker and more emaciated; constipation and jaundice persisted; his pulse remained slow, usually being about 48. The temperature was always normal or subnormal. Finally he became drowsy and rambled, and died on March 11th, 1880.

At the post-mortem examination the liver was found to be very large, weighing 4 lbs. 7½ oz. It was jaundiced, and contained a few very small nodules of new growth. There was no naked-eye or microscopic evidence of cirrhosis. The stricture of the common bile-duct was in the pancreas, and was due to scirrhus. By firm pressure on the gall-bladder enough bile could be made to exude to show where the orifice of the duct in the duodenum was situated. In this case the obstruction of the duct had lasted five months.

Case 2.—C. N—, æt. 59, gardener, was admitted into St. Thomas's Hospital, under the care of Dr. Ord, on April 21st, 1888, and died on May 24th, 1888. There was nothing of importance either in his own or his family history. In the previous November he began to suffer from nausea and occasional vomiting, which had continued ever since. On two occasions he had had attacks of pain, worse on the left side, situated below the costal arch and lasting two or three hours. Jaundice came on with the first symptoms, and he lost flesh. Bowels had been regular, the motions very light in colour, the urine very dark. Had not noticed any swelling of abdomen.

On admission he was found to be a cachectic-looking man, with yellow skin and conjunctivæ. His arteries were thick, and he had well-marked arcus senilis. There was no disease of lung, but the heart's apex beat was one inch to left of nipple line, and there was a blowing systolic murmur heard everywhere over the cardiac area. The abdomen was distended, and contained some fluid. The liver dulness extended from sixth rib on right to a point two inches below the costal arch. Urine was of sp. gr. 1020, contained no albumen or

sugar, but it was very dark in colour, and gave bile reactions. The bowels were constipated, and the stools pale.

On May 9th his abdomen was tapped, and nine pints, five ounces of transparent, bile-stained fluid were withdrawn. Later he was tapped again. He gradually got weaker, his legs became swollen, he vomited sometimes once, sometimes twice in the twenty-four hours, the vomit containing sarcinæ and sometimes blood, and he finally died on May 24th.

The post-mortem examination revealed hard new growth in the connective tissue of the portal fissure, pressing upon the ducts and vessels. The pylorus was adherent to the lower surface of the liver, and only admitted the tip of the index finger. There was complete obstruction of the common bile-duct with great dilatation of the bile-ducts in the liver. No cirrhosis of liver and no secondary nodules of new growth; a few were disseminated over the peritoneum. The aortic valves were calcified, but did not admit of regurgitation. In this case the biliary obstruction had persisted six or seven months.

Case 3.—G. M—, æt. 45, tanner, was a patient of mine in the out-patient room at St. Thomas's Hospital in October, 1885, and was admitted under Dr. Ord's care on November 19th, 1885. He died on February 16th, 1886.

The patient had been a healthy man, with nothing remarkable in his own or his family history. Had drunk a fair amount of beer.

Nine months previous to admission he had begun to suffer from constipation, biliousness, jaundice, depression, and sickness. For eight months he had passed a large quantity of urine. Before his illness he weighed 10 st., but he had been reduced to 7 st. 3 lbs.

He was an emaciated man, complaining of great weakness, jaundice, and a painful lump on left side of neck. He was jaundiced pretty deeply, most so on face and body, less so in conjunctivæ. The latter were œdematous. A red, tender, fluctuating, swelling was found outside the left sterno-mastoid muscle. Urine was 1035, acid, clear; contained sugar, but no albumen, but was very dark and gave bile reactions. The abdomen presented no abnormal physical signs. The tongue was red, and there was much thirst. Appetite was bad; the

bowels regular, motions being pale. The lungs presented physical signs which could hardly be called normal, and yet there was nothing very definitely wrong. Temperature and heart were natural. Pulse 70.

The abscess in his neck was opened and thick pus removed. All along his urine contained a considerable quantity of sugar. His temperature was sometimes high, and rhonchi, tubular breathing, and other signs of disease appeared in his lungs. His jaundice remained very deep, and some fluid accumulated in the peritoneal cavity.

At the post-mortem examination on February 16th, 1886, caseous glands and chronic thickening of connective tissue were found in the portal fissure. The gall-bladder was distended with clear fluid, and nothing could be made to pass into the bowel by pressing it. The bile-ducts in liver were large and distended with fluid, in which was a greenish granular precipitate. The liver was rather tough, and weighed 2 lbs. $13\frac{1}{2}$ oz., but there was no cirrhosis either macro- or micro-scopically. The heart was atrophied, and lungs and kidneys were studded with comparatively recent tubercles.

In this case the jaundice had lasted about a year.

I could give many cases of a similar kind were it necessary, but three are sufficient to illustrate what I have to say. It should be clearly understood that I am writing from a clinical rather than from a pathological standpoint when I say that cirrhosis does not result from long-continued obstruction of the common bile-duct. I could show microscopical sections to prove that it does—that is to say, that after a long period there may be a slight increase of the connective tissue of the liver. But the amount of increase is not sufficient to make it necessary to take it into consideration in our treatment of such cases.

Nowadays surgical interference is largely resorted to for obstruction of the common bile-duct, and the question often presents itself—How long are we warranted in waiting before advising an operation? There is no doubt that a fair number of such cases get rid of the obstruction and recover, if left alone, and that even after a long interval. But, were it true that a few months' biliary obstruction produced cirrhosis at all comparable to that which results from experimental ligature

of the common bile-duct in animals, we should not be justified in deferring the operation, even for a month or two, although the patient might not be losing ground in any way. For if we did so, however successful the subsequent operation might be, we should have allowed a very serious cirrhosis of the liver to develop. This, however, I do not believe to be a real danger, at any rate in obstruction of the duct from other causes than gall-stones. My impression is that the same holds good in the case of gall-stones as well, but I am unable to give cases in support of this belief.

Note.—Since I wrote the foregoing remarks Dr. Copeman has been kind enough to give me a portion of the liver taken from a woman whose case he has published in the 'Lancet,' of May 25th, and June 1st, 1889, under the heading—"Unique Case of Biliary Fistula, with some observations on the Bile obtained from it." Here the common bile-duct was obstructed by a good-sized gall-stone for at least three months before the gall-bladder was opened by a surgical operation. The following is taken from the account given by Dr. Copeman of the post-mortem examination:—"A portion of the liver, including the atrophied gall-bladder with the cystic and common ducts, was handed over to Mr. Shattock for more careful dissection and preservation as a museum specimen. On examination he found that the liver, except that its substance was stained with bile, and that the main bile-ducts were somewhat dilated, was perfectly normal, and that there was no stricture or new growth of any kind along the course of either cystic or common duct. Quite at the extremity of the common duct, just at its junction with the intestine, a calculus was found firmly impacted, which measured 1·3 c. in its greatest transverse, and 1·6 c. in its greatest longitudinal diameter. With the exception of the blocking at this point, the ducts were quite patent throughout their course, and communicated freely with the gall-bladder. The common duct was somewhat dilated at its point of union with the cystic duct, where, on its being laid open, the circumference measured 3·3 c. From the size of the calculus it seemed quite impossible that anything short of a surgical operation could ever have dislodged it from the position in which it was found."

I have recently examined microscopical sections of the liver from this case, and I find no cirrhosis. The largest portal canals have their connective tissue thickened, but there is no inter- or intra-lobular cirrhosis.

DESCRIPTION OF PLATE

Illustrating Dr. Sharkey's paper on Hypertrophic Cirrhosis of the Liver with Jaundice.

FIG. 1.—Section of liver as seen under a low power.

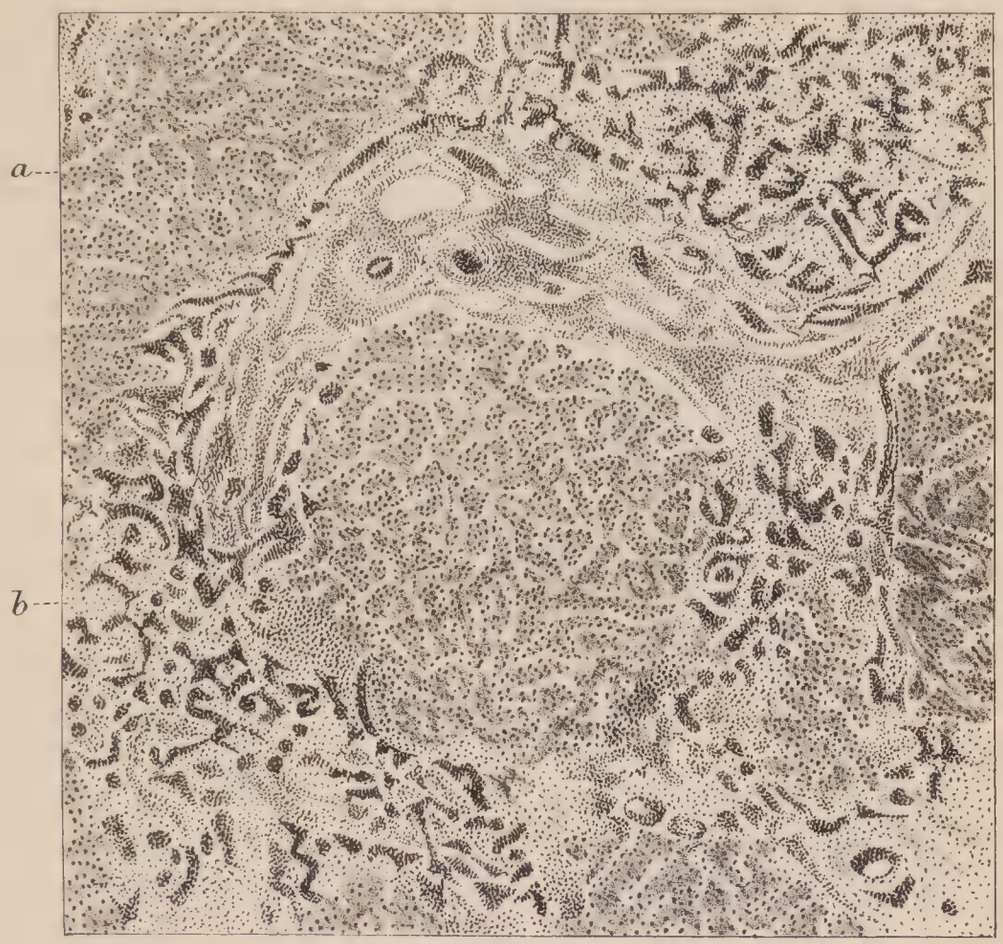
a. Represents the unaltered liver-cells in the lobule.

b. The new connective tissue with rich plexus of bile ducts.

In some places the gradual encroachment of the bile ducts on the lobule, by transformation of liver-cells into the epithelium of the bile-ducts, is well seen.

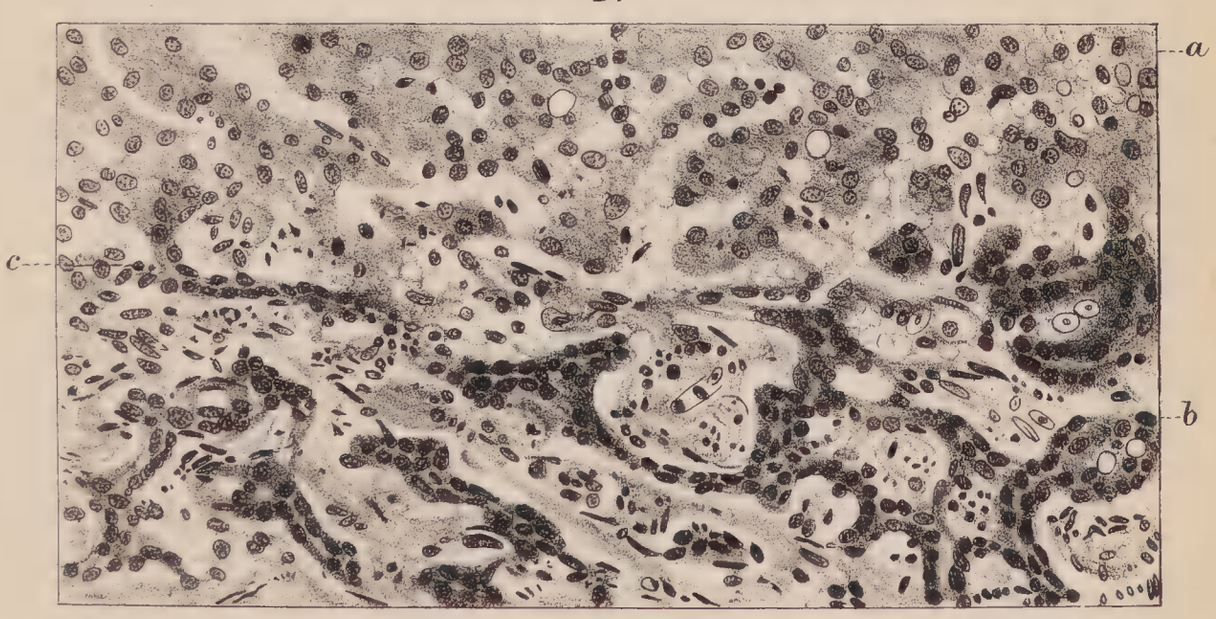
FIG. 2.—Shows under a higher power the line of junction between liver-cells (*a*) and bile-ducts (*b*). At *c* and elsewhere the transformation of the liver-cells into epithelium of ducts is clearly seen.

1.

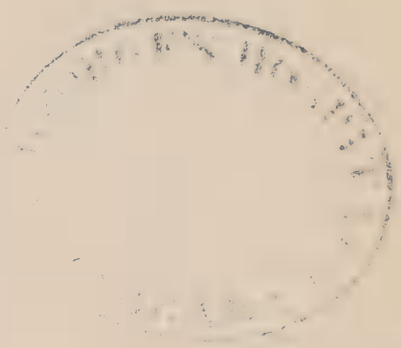


X 45

2.



X 200



A COMPLETE LIST

OF ALL

CASES OF URINARY CALCULUS,

RENAL, VESICAL, AND URETHRAL,

TREATED IN ST. THOMAS'S HOSPITAL DURING THE TWENTY YEARS FROM 1869 TO 1888 INCLUSIVE.

By E. SOLLY, M.B., F.R.C.S.

I am indebted to the courtesy of the surgical staff of the hospital for liberty to make use of the notes of their cases in preparing the following tables, which have been drawn up partly with a view of ascertaining whether any useful deductions may be drawn from the collected series, and partly with the object of forming a basis of comparison for the results of future years. For the former purpose the total number of cases is of course barely sufficient to make the results of much value were they not taken together with other similar tables; but there is at least one point of importance, namely, that giving as they do an impartial summary of a complete set of cases, successes and failures, they are more reliable than tables made up by the collection of isolated cases, or short series of cases, published from time to time in the journals or reported at the societies.

To consider the tables in detail, we have in Table I the cases of operation for renal calculus. From a total of 6 cases only, it is impossible to draw many deductions; but it may be noted that the only case in which a primary nephrec-

tomy was performed died sixteen hours after operation from collapse ; the cause of death in the other fatal case was pyæmia, the condition of the kidney being such as to render an aseptic course impossible.

Tables II to V give the results of lateral lithotomy in males. The majority of cases being under sixteen years of age, I have included them in separate tables.

In Table II we have 23 cases with 1 death, a mortality of about $4\frac{1}{3}$ per cent. ; and although death occurred on the second day after operation, it must be borne in mind that (1) the stone, which was partly phosphatic, broke during the operation, causing difficulty and delay in extraction ; (2) that the symptoms had existed four years, almost since birth ; and (3) that the post-mortem examination revealed extensive renal disease. The fatal result, therefore, if it should be entered as directly due to the operation, at any rate carries extenuating circumstances with it.

Table III gives us 17 cases between six and ten years with 1 death from surgical kidney, the stone having been a large one, and the rectum wounded at the operation. There is no evidence as to the condition of the kidneys before the operation, but with a large stone, and symptoms dating back for at least two years, it is not improbable that the organs were already slightly affected.

Table IV, representing cases between eleven and sixteen, or the period of commencing puberty to adolescence, is less satisfactory. The higher death-rate is in agreement with the returns of most statistics for this period, where the increased activity of the genito-urinary system just passing through the period of puberty renders the parts less tolerant of operative interference, even in the absence of distinct organic disease. In this table, however, both the fatal cases were complicated by the existence of chronic renal disease before the operation, there being also in one a calculus impacted on the vesical end of the ureter, the kidney on the same side being in a condition of commencing hydronephrosis, as well as containing many small calculi.

Taking the whole series of cases up to sixteen years of age, we have a total of 52 with 4 deaths, a mortality of 1 in 13, or about $7\frac{1}{2}$ per cent.

Sir Henry Thomson's tables ('Practical Lithotomy and Lithotrity,' Churchill, 1880) give a total of 1028 cases up to sixteen years of age, with 68 deaths, a mortality of 1 in 16 exactly. The St. Thomas's table is too small to get an exactly fair result, but it must be allowed than in 3 of the 4 fatal cases death was mainly due to causes distinct from the effects of operation, and with this consideration the results are sufficiently alike to be satisfactory.

In Table V are grouped together all the remaining cases from sixteen years upwards—31 cases in all. The number is small in proportion to the total under sixteen, and the death-rate for the whole series high, but it must be noticed that the lithotrity table includes most of the adult cases (the practice of lithotrity in children being too recent to appreciably affect our statistics); and, as was long ago pointed out by South (Chelius's 'Surgery'), the increasing frequency of lithotrity necessarily raises the lithotomy death-rate, the latter operation becoming more and more a *pis-aller* in cases where the former is deemed unsuitable, or has been tried unsuccessfully—the very cases, in fact, which would be least likely to be successful under any method of treatment. The truth of this observation will be doubtless more and more confirmed by the extension of lithotrity to the case of children.

Taking Table V by itself, we have 31 cases with 9 deaths —a mortality of about 1 in $3\frac{1}{2}$. All the deaths, however, were in cases over thirty-five years, and in 5 cases extensive renal disease was present before operation, 1 having pyonephrosis with renal calculi, and suffering from uræmia at the time of operation; of the remainder, 2 were suffering from severe cystitis, dating in the one from a cystoscopic examination three days previously, and in the other from a lithotrity in three sittings, lithotomy being only performed as a last chance in the hope of relief being obtained from drainage of the bladder. In the remaining 2 cases (Nos. 81 and 84), fatal from "septicæmia" and "broncho-pneumonia" respectively, death may be attributed to the operation more fairly; but the existence of subacute cystitis with offensive condition of urine before operation presented a serious difficulty from the first.

To summarise, we find that there are 68 cases under the

age of thirty-six with only 4 deaths (a mortality of 1 in 17); or if we take only the first 65 cases, *i. e.* those under thirty, for easier comparison with Sir Henry Thomson's statistics (quoted above), we find as before 4 fatal cases, giving a mortality of 1 in 16 for our table, as compared with 1190 cases with 90 deaths, a mortality of 1 in $13\frac{1}{4}$ in his; our total of 84 cases of all ages with 13 deaths giving a mortality rate of 1 in $6\frac{1}{2}$, while Sir Henry Thomson's series of 1827 cases of all ages with 229 deaths makes the rate 1 in 8.

The latter, which may be taken as representing the general mortality rate in England up to 1880, agrees closely with the rate at the Norwich Hospital up to 1869, quoted in Erichsen's 'Surgery' (9th ed.) as being 1 in $7\frac{1}{2}$. As has been remarked, the rate will probably gradually rise in future owing to the advance of lithotrity, especially in the case of children, and the diminishing practice of surgeons in the operation; while the introduction of antiseptics cannot be expected to have any appreciable effect in the other direction.

It is interesting to note that Mr. Thomas Jackson, in 'St. Thomas's Hospital Reports' (new series, vol. i), quotes from Mr. South ('Chelius's Surgery') a series of 144 cases by St. Thomas's Hospital surgeons up to the year 1846, with a death-rate of 1 in $9\frac{3}{4}$, Cheselden's own death-rate being 1 in $10\frac{3}{4}$. Many earlier series are quoted with a still lower death-rate, but these must be considered somewhat unreliable owing to imperfect records kept, many of the figures given being admittedly derived from hearsay reports.

Table VI, showing the cases of vesical calculus in females, I have added merely for sake of completeness, separating this class from calculus in males, there being no ground for comparison between the two. The method of dilating the urethra and extracting by simple forceps in the case of small stones, and lithotrity for larger ones, is likely to remain the standard method of treatment, a few possible cases remaining to be dealt with by supra-pubic cystotomy.

Table VII gives the supra-pubic lithotomies, 13 cases, 2 deaths—a total too small to be of much value as to questions of death-rate, &c., though it is interesting to note that the two fatal cases were both complicated by the exist-

ence of pyonephrosis, and that in one of them, in which lithrotrity had failed, large fibromatous growths from the prostate were present, to which the failure to catch the fragments of the half-crushed calculus was evidently due.

Healing by first intention occurred in four cases only, all of these being children under ten years; and as regards this point it may be considered that first intention healing is only to be aimed at in the case of very healthy subjects, where the calculus is small and has been extracted without any difficulty or bruising of soft parts. Such cases, however, will, almost invariably, be just the ones for which lithotrity is suitable, whether in adults or children.

Table VIII. Lithotrity.—In considering this table it will be seen that it is of a more composite character than the preceding ones, owing to the improvements in the manner of performing lithotrity introduced by Bigelow in 1878. In my summary at the foot of the table I have, therefore, made special groups to separate the cases treated under the old and new methods respectively, as well as giving the results of treatment at different ages. The figures are sufficiently conclusive, in spite of the smallness of the totals. Of the 4 deaths, 3 occurred under the old system of operating, though the total number thus treated only amounts to 9. Of the 27 cases treated under the new system 1 alone died, and in that case chronic atrophic nephritis was present.

On the question of mortality at different ages, the smallness of the totals would not justify the expression of an opinion if one had not in mind the brilliant results published by Surgeon-Major Keegan in the 'Lancet' in 1886, namely, a series of 58 litholapaxies in children, all under fourteen, with only 1 death, and an average duration of only seven days in hospital after the operation, many of the patients being up and about the ward several days before this. Mr. Walsham also read a paper at the Dublin meeting of the British Medical Association, published in the 'British Medical Journal' (1887, vol. ii), giving a series of 9 cases without a death, in which, though the exact average stay in hospital is not given, it evidently did not exceed a few days, and quoted Surgeon-Major Goldsmith's and Dr. Raye's series of 22 successful cases published in the 'Indian Medical Gazette'

(May, 1887), the average duration of residence being 6·3 days after operation.

These figures speak for themselves ; for though we have, on the other hand, Surgeon-Major Keegan's brilliant series of 188 lithotomies in the Hyderabad Hospital in the year ending May 31st, 1887 ('Brit. Med. Journ.,' vol. ii, 1887), with only 8 deaths, 105 of which, under the age of twenty-five, were all successful, it is obvious that an operation by which the patient is entirely freed from his troubles within a week at most is preferable to one necessitating in the most favorable cases, a stay of fifteen to twenty days, besides all the discomfort and risks of a cutting operation.[1] It may be urged against lithotrity that unless it is carefully performed, small fragments may remain to form the nuclei of fresh concretions, but with improved instruments in the hands of a careful and reasonably skilful operator this risk is inconsiderable. The figures alone are sufficient to prove that the other supposed difficulties and dangers due to the smallness of the urethra and bladder do not exist in the majority of cases ; doubtless such cases of difficulty do and will occur, and for such lithotomy will be necessary, but it seems clear that in future lithotrity—more correctly "litholapaxy"—will be the standard method of treatment of vesical calculus at all ages—a conclusion impressed upon us not so much by a consideration of the relative rates of mortality as of the relative duration of stay in hospital necessary after operation, our own figures on this head being sufficiently conclusive to deserve notice (see summary at foot of each table).

Tables IX, X, and XI give the cases of *impacted calculus* in the urethra, and require little explanation or comment. It will be seen that in the majority a perinæal incision was necessary for extraction, the calculus being impacted in the deeper parts of the urethra ; of these four were admitted with

[1] It should be noted, too, that in Surg.-Major Keegan's paper he admits that the "patients were all healthy as far as he could ascertain, many old and feeble patients being sent to their homes without being operated upon, much against their will." Surely vesical calculus is not a disease in which a surgeon is justified in picking his cases. Again, his table includes seven females ; these should hardly be placed in the same category as males, the conditions being so widely different.

extravasation of urine already present, and of these one was already dying of uræmia on admission.

In conclusion I may remark that in collecting the above statistics I had no intention of discussing the subject with which they are concerned; this has been already done in many places during recent years, and in a way that leaves little to be added, until the accumulation of further experience as to the scope and results of the various operations for calculus. Many of the cases alluded to have been published elsewhere, and deductions drawn from them; and all that I have attempted is to classify the cases, and to put the information to be derived from them in a more accessible form.

TABLE I.—*Renal Calculus, Operations for. St. Thomas's Hospital Records.*

No.	Date.	Age.	Sex.	Duration of symptoms.	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus.	Remarks.
1	1883	20	M.	6 mos.	122	52	C.	—	Lumbar nephro-lithotomy; external wound closed with drainage-tube; urine before and after operation contained pus and blood; these gradually disappeared by the 22nd day after operation; a trace of albumen still present in urine on discharge; no leakage of urine through wound, which was practically healed by the 15th day.
2	1887	21	M.	9 wks.	135	132	R.	"Friable"	Lumbar nephro-lithotomy; calculus removed piecemeal; drainage-tube into pelvis and kidney; urinary fistula still present on discharge.
3	1886	22	M.	3 mos.	71	38	D.	Mixed phosphates	Twenty-eighth day from admission aspiration of 1 oz. pus from right lumbar region; 33rd day lumbar nephro-lithotomy; extensive pyelitis; rigor 12th day after operation; pyæmia. Death 38th day. Post-mortem.—Adhesions between right kidney and liver; kidney = a multilocular sac with many uric acid and phosphatic calculi; capsule thickened; a thin layer of secreting substance left; ureter healthy; left kidney healthy; bladder hypertrophied; enteritis; large spleen; infarcts lower lobe right lung; prevertebral suppuration from 1st to 10th dorsal (not communicating with kidney).
4	1881	39	F.	12 yrs.	167	154	C.	—	Pain 12 years; 3 years ago much worse for 6 weeks, when pyurea commenced, and pain almost ceased; 15 months before admission lumbar abscess formed and opened spontaneously; 7 weeks before admission discharging 11 calculi through the sinus. On admission a calculus felt on probing sinus; incision; calculus found to have travelled some way along the sinus; removed; wound entirely healed on discharge.
5	1887	45	F.	17 yrs.	90	61	C.	"Dark and rough"	Lumbar nephro-lithotomy; drainage-tube into kidney; urinary fistula till 59th day after operation.
6	1886	55	M.	2 yrs.	18	$\frac{2}{3}$	D.	"Flattened"	Left lumbar nephrectomy; vertical extension of incision to obtain more room; calculus impacted in commencement of ureter; ureter ligatured and left. Death from collapse; right kidney appeared fairly healthy.

SUMMARY.—Total number of cases—6. Number of deaths—2. Cause of death—(1) Pyæmia, 38th day after operation; (2) Shock, 16 hours after operation. Average duration of residence after operation in non-fatal cases = 99 days.

TABLE II.—*Lateral Lithotomy, between age of* 1 *and* 5. *St. Thomas's Hospital Records,* 1869—1888 *inclusive.*

No.	Date.	Age.	Duration of symptoms.	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus.		Remarks.
							Nature.	Size.	
1	1871	2½	?	40	33	C.	Uric acid and urate of ammonia	"Horse-bean"	All urine by urethra from 20th day after operation.
2	1872	2½	9 mos.	49	39	C.	Uric acid	Not stated	
3	1873	2½	5 days	69	51	C.	"Light brown colour"	Ovoid ⅝ in. long	
4	1874	2½	6 mos.	31	27	C.	Uric acid	"Coffee berry"	All urine by urethra from 18th day.
5	1883	2½	1 mo.	31	27	C.	Not stated	"Hazel nut"	See below. Same case as No. 12. All urine by urethra from 15th day.
6	1888	2½	8 mos.	115	51	C.	Uric acid	1⅜ × ¾	Scarlatina while awaiting operation; all urine by urethra from 3rd week after operation.
7	1875	2¾	1 yr.	43	23	C.	,,	Not stated	
8	1870	3	1 mo.	51	Not stated; see under "Remarks"	C.	,,	"Orange pip"	Date of operation not given, but "wound healed on 14th day;" had had scarlatina and nephritis 6 weeks before admission.
9	1875	3	5 wks.	49	36	C.	Uric and urates	"Small"	All urine by penis from 15th day.
10	1878	3	5 mos.	62	39	C.	Oxalate	Not stated	Fæces through wound from 5th to 9th day; "well" on 23rd day, and got up.

No.	Date.	Age.	Duration of symptoms.	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus.		Remarks.
							Nature.	Size.	
11	1879	3	1 yr.	39	35	C.	"Coated with phosphate"	Bean	Urine through wound till after 2nd week.
12	1883	3	3 wks.	32	24	C.	Uric and urates	"Small bean"	Same case as No. 5 above; 2nd operation.
13	1869	3½	3 yrs.	69	32	C.	Uric and phosphates	1½ × 1 inch	
14	1870	3½	15 mos.	50	29	C.	Uric acid	Sparrow's egg	All urine by urethra from 9th day.
15	1872	4	1 mo.	40	21	C.	„	—	Erysipelas 7th to 11th day after operation; "convalescent" on 30th day.
16	1876	4	1 mo.	177	79	C.	„	Coffee berry	Fæcal fistula after operation 3rd day to 6th week.
17	1882	4	2 wks.	199	18	C.	„	"Cherry"	Admitted for fractured femur; developed scarlatina while under treatment, during progress of which calculus discovered.
18	1870	5	4 yrs.	8	2	D.	Uric and phosphates	Uric acid; nucleus size of pea	Phosphates covering broke away during extraction. Post-mortem.—Peritonitis; renal calculi, and 1 impacted in right ureter.
19	1876	5	?	32	27	C.	Uric acid	Not stated	All urine by urethra from 13th day.
20	1878	5	3 yrs.	183	146	C.	Uric and phosphates	Large	Fifty-fifth day after operation pus from rectum; 68th day small lumbar abscess incised.
21	1880	5	1 yr.	57	49	C.	„	1½ × ¼ × ¼ inch.	Scarlatina after operation; wound healed on 35th day.
22	1883	5	3 wks.	50	41	C.	Not stated	"Small"	All urine by urethra from 2nd week; orchitis 17th day after operation.
23	1888	5	8 mos.	52	38	C.	„	1½ × ¼ inch	

SUMMARY.—Total number of cases—23. Number of deaths—1. Average duration of residence in non-fatal cases = 36 days.
Nature of calculi.—Uric acid 10, uric acid + urates 3, uric acid + phosphates 4, oxalates 1, not stated 5 = 23.

TABLE III.—*Lateral Lithotomy, age 6—10. St. Thomas's Hospital Records, 1869—1888 inclusive.*

24	1877	6	9 mos.	100	95	C.	Uric acid	Small	All urine by penis from 7th day; wound healed 22nd day; reopened and discharged pus later; finally closed well.
25	1879	6	2 yrs.	91	86	D.	Urate of ammonia	$1\frac{3}{4} \times 1\frac{1}{2} \times \frac{1}{2}$ inch	Weight of calculus $\frac{3}{4}$ oz.; progress favorable in spite of fæcal fistula, which lasted till 70th day, on which date febrile symptoms developed delirium, hæmaturia, &c. Post-mortem.—Surgical kidney and vesico-rectal fistula.
26	1884	6	4 mos.	47	32	C.	Oxalate	Hazel nut	Some extravasation of cellulitis after operation; all urine by penis from 16th day.
27	1879	7	3 mos.	69	40	C.	Uric and phosphates	$\frac{3}{4} \times \frac{1}{4}$ inch	"Well" on 28th day.
28	1881	7	?	53	48	C.	Uric acid	1 inch diam.	
29	1872	8	2 yrs.	99	Not stated	C.	„	$1 \times \frac{3}{8}$ inch	Wound healed 58th day.
30	1876	8	12 mos.	73	65	C.	Oxalate	Not stated	All urine by penis from 24th day.
31	1884	8	14 days	62	54	C.	„	"Filbert"	An attack of "acute rheumatism" 23rd day after operation; all urine through urethra from 16th day.
32	1884	8	6 wks.	94	60	C.	„	"Marble"	All urine by penis from 19th day.
33	1885	8	2 yrs.	30	25	C.	„	"Filbert"	All urine by penis from 12th day.
34	1886	9	2 yrs.	56	46	C.	Urate of ammonia	$1\frac{1}{4} \times \frac{1}{2} \times \frac{3}{8}$ inch	Wound of rectum at operation.
35	1877	10	2 mos.	33	24	C.	Uric	Large	"No complication."
36	1879	10	?	96	84	C.	Oxalate	„	All urine by penis from 14th day.
37	1879	10	2 yrs.	93	88	C.	Fusible	$1\frac{1}{2} \times 1\frac{1}{4} \times \frac{3}{8}$ inch	Weight of calculus 1 oz.; all urine by penis from 18th day.
38	1880	10	1 mo.	43	35	C.	Uric nucleus, oxalate, and phosphates	$1\frac{1}{2} \times 1\frac{1}{4}$ inch	Calculus broke during extraction; all urine by penis from 35th day.
39	1882	10	7 yrs.	93	84	C.	"Rough"	$2 \times \frac{3}{4}$ inch	Composition of calculus not stated; urine through wound till 64th day.
40	1885	10	3 yrs.	33	31	C.	Oxalate and phosphates	$\frac{1}{2}$ inch diam.	All urine through urethra by 14th day.

SUMMARY.—Total number of cases—17. Number of deaths—1. Average duration of residence after operation (of 15 cases, excluding fatal case)=54 days. Nature of calculus.—Uric acid 4, uric acid + phosphates 1, urate of ammonia 2, oxalate 6, oxalate + phosphates 1, uric acid + oxalate and phosphates 1, fusible phosphatic calculus 1, not stated 1=17.

TABLE IV.—*Lateral Lithotomy, age* 11—16. *St. Thomas's Hospital Records,* 1869—1888 *inclusive.*

No.	Date.	Age.	Duration of symptoms.	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus.		Remarks.
							Nature.	Size.	
41	1877	11	8 years	80	34	C.	Uric acid	—	Urine by wound till 16th day.
42	1883	11	"3 days"	43	40	C.	Oxalate	"Very small"	One oxalate calculus extracted from urethra by forceps 3 days before operation; all urine passed by penis 11th day after lithotomy.
43	1887	11	3 wks.	30	26	C.	Not stated	"Small"	
44	1875	12	2 mos.	92	81	C.	Uric acid and phosphates	"Walnut"	"Some urine by penis 10th day; quite recovered 27th day."
45	1880	12	2 yrs.	41	31	C.	„	Small pigeon's egg, $1\frac{1}{2} \times 1\frac{1}{4} \times \frac{3}{8}$ inch	All urine passed by penis from 10th day after operation; delay in healing of external wound due to cellulitis.
46	1883	12	1 mo.	13	2	D.	Facetted	"Bean"	At same operation small calculus found impacted in right ureter close to vesical orifice; removed by incision. P.M.—Peritonitis; no rupture or perforation of any viscera; right kidney and ureter dilated, containing gravel concretions.
47	1885	13	1 yr.	57	50	C.	Oxalate	"Walnut"	Urinary fistula till 42nd day.
48	1869	14	"Since infancy"	106	70	C.	"Phosphates"	—	Calculus broke in extraction.
49	1879	14	2 yrs.	35	31	C.	"Phosphates externally"	—	All urine by penis from 14th day.
50	1883	14	3 yrs.	88	85	D.	Uric acid and phosphates	$1\frac{7}{8} \times 1$ inch	Chronic renal disease before operation (urine acid, containing albumen, pus, and granular casts. Post-mortem.—Signs of chronic disease of whole urinary tract; amyloid disease of spleen.
51	1874	16	5 yrs.	52	37	C.	Oxalate	"Walnut"	Calculus broke during extraction; all urine by penis from 13th day.
52	1885	16	2 yrs.	34	21	C.	„	1×1 inch	Urine by penis from 11th day.

SUMMARY.—Total number of cases—12. Number of deaths—2. Average residence after operation (excluding fatal cases) = 42·2 days.
Nature of calculus.—Uric acid 1, uric acid + phosphates 3, oxalate 4, phosphates 1, not stated 3 = 12.

TABLE V.—*Lateral Lithotomy, age 17—83 inclusive. St Thomas's Hospital Records, 1869—1888 inclusive.*

53	1875	17	Many years	64	47	C.	Uric acid and phosphates	1¼ × ¾ inch	All urine by penis from 29th day.
54	1869	18	„	57	42	C.	Oxalate and phosphate	1⅜ × 1¼ inches	All urine by penis from 39th day.
55	1874	18	6 mos.	63	41	C.	„	"Size of metacarpal bone of thumb"	Albuminuria before operation; all urine by penis from 15th day (see 'Lancet,' Oct. 24th, 1874).
56	1874	20	"Several years"	67	54	C.	Triple phosphate	—	Oval calculus, size not stated; all urine through penis from 17th day.
57	1876	20	1 yr.	59	50	C.	Oxalate	"Small"	All urine by penis from 33rd day.
58	1876	20	2 yrs.	47	39	C.	„	„	Weight of calculus 158 grs.; got up "well" on 29th day.
59	1878	20	5 yrs.	40	35	C.	Not stated	1½ inches diam.	All urine by penis from 16th day.
60	1883	21	7 yrs.	57	49	C.	Oxalate	"Large"	All urine by penis from 39th day; much trouble from hæmorrhage from transverse perinæal artery for 3 days after operation.
61	1871	26	5 mos.	58	54	C.	„	Not stated	Weight of calculus 12 oz.; albuminuria before operation; all urine through penis from 37th day; shivering and temp. 102° and 103° during 1st week; otherwise progress good.
62	1872	26	6 mos.	58	54	C.	„	"Walnut"	
63	1887	27	9 mos.	36	25	C.	Not stated	Not stated	Two calculi, facetted; all urine by penis after 13th day.
64	1885	28	18 mos.	93	85	C.	Uric acid and phosphates	1¼ × 1 inch	Lithotrity first tried, but efforts to grasp stone unsuccessful.
65	1884	29	5 yrs.	91	57	C.	Not stated	1⅞ inches long	Delay due to erysipelas on 28th day after operation.
66	1887	34	8 yrs.	145	138	R.	„	1¼ × ¾ inch	Recto-vesical fistula (readmitted 1889).
67	1872	35	?	177	76	C.	Uric acid and phosphates	Not stated	Eighteen months previously fracture of lumbar spine; paresis and paræsthesia still present, but passing off.
68	1886	35	9 yrs.	78	74	R.	Oxalate	1½ × 1¼ inches	Minute perinæal fistula still present on discharge; weight of calculus 406 grs.

No.	Date.	Age.	Duration of symptoms.	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus.		Remarks.
							Nature.	Size.	
69	1881	36	9 mos.	18	4	D.	Not stated	$1\frac{1}{2} \times \frac{3}{4}$ inch	P.M.—"Surgical kidney; cystitis; enlarged prostate; pelvis of both kidneys much dilated, right containing many ragged calculi; suppurative nephritis; no peritonitis."
70	1880	40	4 yrs.	56	31	C.	Uric acid and phosphates	$1\frac{1}{2} \times 1\frac{1}{4} \times \frac{1}{2}$ inch	
71	1885	41	4 yrs.	19	17	D.	"Coated with phosphate"	"Size of medlar"	Renal disease; stricture of urethra (for which intestinal urethrotomy performed before operation); no post-mortem.
72	1874	49	12 mos.	25	14	D.	Phosphates	$1\frac{1}{4}$ inches long	Renal disease before operation; much hæmorrhage at operation; progress favorable for 3 days, then fever, delirium, lumbar pain, convulsion. P.M.—Pulmonary embolism.
73	1888	50	5 mos.	8	1	D.	Uric acid	All about $\frac{3}{4}$ inch diam.	Four flattened calculi; acute cystitis present before operation, following cystiscopy 3 days before.
74	1880	55	7 mos.	57	49	C.	,,	"Marble"	Cystitis before operation.
75	1878	56	18 mos.	29	24	C.	,,	$1\frac{3}{4} \times 1\frac{1}{2}$ inches	
76	1876	57	10 yrs.	50	46	C.	Urate of ammonia	Each $1\frac{3}{4} \times 1$ inch	Two calculi; all urine by penis from 26th day.
77	1874	59	9 mos.	154	70	C.	Uric acid	Ranging from size of hazel to walnut	Six calculi; all urine by penis from 22nd day.
78	1873	59	4 yrs.	42	3	D.	,,	Not stated	Lithotrity, 3 sittings, 35, 25, and 14 days respectively before operation. P.M.—Sloughing cystitis.
79	1878	64	18 mos.	18	1	D.	,,	,,	Twenty-two fragments of calculi in bladder; enlarged growth; extensive renal disease, with uræmia before operation.
81	1878	67	$2\frac{1}{2}$ yrs.	19	10	D.	,,	1 inch diam.	Death from septicæmia; cystitis bad before operation.
82	1876	69	2 yrs.	62	46	D.	,,	$1\frac{1}{2}$ inches diam.	Enlarged prostate; albumen and pus in urine before operation; fæcal fistula after operation; death from pyæmia.

			years				with phosphates"	sant's egg"	stop hæmorrhage (see 'Lancet,' July 8th, 1876).
84	1880	83	2 yrs.	14	6	D.	Uric acid and phosphates	$2\frac{1}{4} \times 1\frac{1}{2} \times 1$ inch	Cystitis before operation. P.M.—"Broncho-pneumonia;" no complication at operation.

SUMMARY.—Total number of cases—Age

	Cases.		No. of deaths.
17—20	7	...	0
21—30	6	...	0
31—40	5	...	1
41—50	3	...	3
51—60	5	...	1
+60	5	...	4

=9 deaths in 31 cases, nearly 1 in $3\frac{1}{2}$.

Average duration of residence after operation (excluding fatal cases)=57 days. Age of fatal cases—36, 41, 49, 50, 59, 64, 67, 69, and 83. Nature of calculus.—Uric acid 10, uric acid + phosphates 5, oxalate 6, oxalate + phosphate 2, urate of ammonia 1, phosphates 2, not stated 5=31.

TABLE VI.—*Vesical Calculus in Females. St. Thomas's Hospital,* 1869—1888 *inclusive.*

1	1883	4	18 mos.	24	19	C.	Uric acid and urates	$1\frac{1}{4}$ inches diam.	Lithotrity; a second sitting for washing out bladder 7 days after crushing.
2	1869	6	8 mos.	52	31	C.	Uric acid	$1 \times \frac{3}{4}$ inch	Dilatation of urethra and forceps extraction.
3	1875	27	4 yrs.	23	23	C.	Oxalate	Small	Passed spontaneously on 2nd day after admission; small calculi passed at intervals for 4 years.
4	1877	28	2 yrs.	9	7	C.	Uric acid and phosphates	$1 \times 1\frac{1}{3}$ inches	Urethra dilated; forceps extraction; old case of vesico-vaginal fistula; nucleus a fragment of wire suture.
5	1881	44	2 yrs.	23	18	C.	Phosphatic	—	Urethra dilated; forceps extraction.
6	1886	54	20 yrs.	36	30	C.	„	$\frac{3}{4}$ inch diam.	Urethra dilated; forceps extraction (1 calculus removed elsewhere in 1885).

SUMMARY.—Total number of cases—6. Deaths—0. Average duration of residence after operation=21 days (nearly). Nature of calculus.—Uric acid 1, uric acid + phosphates 1, uric acid + urates 1, oxalate 1, phosphates 2=6.

Table VII.—*Supra-pubic Lithotomy.*

No.	Date.	Age.	Duration of symptoms	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus.	Remarks.
1	1887	2½	10 mos.	74	64	C.	Not stated	Bladder and external wound sutured (silk); healed by first intention; silk catheter not left in.
2	1886	3½	8 mos.	28	17	C.	Oxalate, ⅓ inch diam.	Bladder and external wound sutured; catgut suture in bladder; silk for external wound; urine drawn off by catheter 1st day; healed by first intention.
3	1887	6	6 mos.	41	18	C.	Not stated	Bladder and external wound sutured; catgut suture; no leakage of urine through wound.
4	1888	7	Several months	27	23	C.	Uric acid, $1\frac{1}{2} \times 1 \times \frac{3}{4}$ inch	Bladder and external wound sutured; pneumonia 2nd day; sutures gave way; slight suppuration and leakage of urine through wound till 8th day.
5	1887	8	3 yrs.	103	91	C.	"Small"	Bladder and external wound sutured; healing by first intention; 2 attacks of scarlatina after operation, on 2nd and 58th day.
6	1887	9	Several months	53	52	C.	Oxalate, $1\frac{1}{2} \times 1\frac{1}{16}$ inches	Bladder and external wound sutured; leakage of urine through wound 2nd day after operation; catheter tied in from 2nd to 10th day.
7	1887	14	1 yr.	49	28	C.	$1\frac{1}{8} \times \frac{3}{4}$ inch	Bladder and external wound sutured; cellulitis around external wound; no leakage of urine after 1st evening after operation.
8	1887	23	10 yrs.	56	45	C.	Phosphate, $1 \times \frac{3}{4}$ inch	Drainage-tube into bladder; external wound sutured; a prostatic calculus removed at same operation; "passed some urine per rectum on 3rd day;" catheter tied in from 11th day to 3rd week.
9	1887	26	2 yrs.	9	3	D.	Rough, spindle-shaped, $1\frac{3}{4} \times 1$ inch	Bladder and external wound sutured. Post-mortem.—Slight pelvic peritonitis (peritoneum not opened at operation); 1 kidney atrophied down to a shrivelled sac containing pus and sabulous matter.
10	1888	41	3 yrs.	51	37	C.	Oxalate and phosphates, 2½ inches in diam.	Lithotrity first tried, but stone could not be grasped; found to be encysted in upper and anterior part of bladder-wall; drain-tube into bladder; catheter in urethra 1st day; tied in at intervals later owing to some trouble, with phosphatic deposits in external wound and bladder; urine through wound till 28th day.
11	1886	60	1 yr.	35	31	C.	Phosphatic	Bladder and external wound sutured; no catheter; leakage of urine through wound till 10th day.

12	1887	62	2 yrs.	10	3	D.	Oxalate + uric acid + phosphates; 2 calculi, 1 size of walnut, 1 (crushed) rather smaller	Lithotrity first tried; 1 stone crushed, but fragments could not be seized for further crushing; at suprapubic operation several large fibromatous tumours springing from base of bladder. Post-mortem.—Atrophy and old pyonephrosis in left kidney; peritonitis.
13	1886	72	12 yrs.	96	91	C.	Two calculi, weights 969 grs. and 945 grs.	External wound partially closed; catheter in urethra after operation.

SUMMARY.—Number of cases—13. Number of deaths—2. Average residence after operation (excluding fatal cases) = 41 days.

TABLE VIII.—*Lithotrity (Males)*, 1869—1888. *St. Thomas's Hospital Records*, 1869—1888 *inclusive.*

1	1888	3	3 days	22	8	C.	$\frac{3}{8}$ inch diam.	No. 5 lithotrite; No. 9 canula for evacuation; up and about ward from 4th day (see 'Lancet,' 1888).
2	1883	16	+ 10 yrs.	9	7	C.	Oxalate, "medium size"	
3	1884	19	1 mo.	22	4	C.	Small, $\frac{1}{2}$ inch diam.	
4	1885	24	4 yrs.	10	5	C.	Oxalate, $\frac{1}{2}$ inch diam.	
5	1886	29	2 mos.	48	44	R.	Phosphatic	Formed around fragment of catheter; weight of débris 1 oz. 40 grs.; fragments of catheter arranged in a line = 13 inches.
6	1887	29	A few weeks	15	11	C.	Oxalate, $\frac{3}{4} \times 1$ inch	
7	1888	38	18 mos.	15	10	C.	Uric acid and phosphates, 1 inch diam.	Weight of débris 36 grs.; urine clear for 24 hours after operation, then became deep brown from (renal) hæmaturia; ? reflex renal congestion.
8	1880	43	?	87	43	C.	Oxalate and uric acid	A second sitting a few days after 1st operation.
9	1887	43	6 mos.	11	8	C.	Oxalate, $\frac{3}{4}$ inch diam.	
10	1870	49	6 mos.	44	43	C.	"Black," size of peach stone	Seven sittings, 2nd, 6th, 8th, 12, 19th, 21st, and 25th days after admission.

No.	Date.	Age.	Duration of symptoms.	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus.	Remarks.
11	1884	49	14 yrs.	44	34	C.	Phosphatic, 2 inches diam.	Stricture of urethra (internal urethrotomy 13 days before operation); 3 sittings, on 10th, 17th, and 25th days after admission.
12	1887	50	3 mos.	14	9	C.	Size of filbert	
13	1884	54	3 mos.	22	17	C.	"Very hard"	Total weight of débris collected = 110 grs.
14	1886	57	6 mos.	31	2	D.	Uric acid and phosphate, multiple small calculi	Post-mortem.—Œdema of lungs; atrophied kidneys; cystitis; sloughing and perforation of bladder; pelvic cellulitis; a few fragments in bladder.
15	1878	60	2 yrs.	57	49	D.	Uric acid and phosphates	Six sittings, on 8th, 11th, 18th, 21st, 31st, and 42nd day after admission. P.M.—"Cystitis, pyelitis, peritonitis, pelvic suppuration."
16	1884	61	4 mos.	14	10	C.	"	Two previous lithotrities in 1882 and 1883.
17	1888	62	13 yrs.	13	7	C.	Uric acid, $1 \times \frac{3}{4}$ inch	Weight of débris 46 grs.
18	1880	63	3 mos.	17	11	C.	Uric acid, $\frac{1}{2}$ inch diam.	Readmitted 3 months later, and a small calculus evacuated by Bigelow's evacuator.
19	1888	64	6 mos.	27	8	C.	Uric acid, 1 inch diam.	Hæmaturia before operation; none after; 6 small calculi came away through evacuator, with fragments of crushed one.
20	1872	65	8 mos.	160	111	D.	"Soft"	Five sittings; death from "cystitis and exhaustion;" no post-mortem.
21	1886	65	9 mos.	71	37	C.	Phosphatic	Perinæal abscess incised, and catheter tied in bladder 3 years previously.
22	1884	66	1 yr.	51	44	C.	Uric acid	
23	1885	66	2 mos.	39	31	C.	Uric acid and phosphates	
24	1871	71	6 mos.	106	89	R.	Oxalate and uric acid	Eleven sittings; cystitis.
25	1884	74	5 wks.	32	19	C.	Phosphatic	See Nos. 28, 30, and 32 (same case).
26	1884	74	1 yr.	51	24	C.	Uric acid and urates	Two sittings, see No. 31 (same case).
27	1874	75	?	41	36	R.	—	Five sittings, on 5th, 10th, 20th, 28th, and 34th days after admission (see 'Lancet,' October 24th, 1884).
28	1885	75	6 wks.	34	27	C.	Phosphatic	Three previous lithotrities, see Nos. 25, 30, and 32 (same case).

29	1885	75	4 mos.	57	45	C.	Phosphatic, "small"	Fragments "sufficient to cover a shilling."
30	1886	75	3 yrs.	54	31	C.	Phosphatic, ½ inch diam.	Fifth admission, see Nos. 25, 28, and 32 (same case).
31	1881	76	2 yrs.	42	29	C.	Uric acid and urates	Readmission, see No. 26 (same case).
32	1887	76	3 mos.	24	12	C.	Phosphatic, size of marble	Five previous admissions; see Nos. 25, 28, and 30 (same case).
33	1874	79	5 yrs.	106	20	D.	Phosphatic	Admitted with retention and enlarged prostate; relieved by catheter; cystitis before operation; no post-mortem.

SUMMARY.—A. Total number of cases—33. Number of deaths—4. Mortality 1 in 8·2, or 12 per cent. Average residence after operation in non-fatal cases = 21·3 days.

B. Cases grouped according to age:

	1—20 years.	21—40 years.	41 years upwards.
Number of cases	3	4	26
Number of deaths	0	0	4
Average residence after operation (excluding fatal cases)	6 days	17·5 days	28 days.

C. Cases grouped according to date (*i. e.* before or after introduction of Bigelow's method):

	Before 1879.	After 1879.
Number of cases	6	27
Number of deaths	3	1
Average residence (excluding fatal cases)	56 days	19·8 days.

TABLE IX.—*Urethral Calculus, treated by Perinæal Incision.*

1	1883	2½	1 day	31	28	C.	—	Perinæal incision.		
2	1876	3	2 days	63	63	C.	—	„	„	Calculus 2 days impacted; extensive extravasation of urine on admission.
3	1877	3	„	80	80	C.	—	„	„	Calculus 2 days impacted; extravasation of urine on admission.
4	1883	3	—	—	—	—	—			
5	1888	3	1 day	69	69	C.	—	„	„	Scarlatina developed 16 days after operation.
6	1884	4	5 mos.	15	15	C.	"Small bean"			
7	1884	4	3 days	21	21	C.	—			
8	1886	4	1 day	29	28	C.	—			
9	1883	5	7 days	50	50	C.	8 × 4 mm.	„	„	Calculus "rough, hard, and brown."

No.	Date.	Age.	Duration of symptoms.	Total duration of residence in hospital in days.	Duration of residence after operation in days.	Result.	Calculus	Remarks.
10	1888	5	?	22	22	C.	"Small bean"	Perinæal incision. No urine through wound after 16th day.
11	1884	6	1 day	124	124	C.	—	„ „ Catheter tied in; cystitis; lateral cystotomy 28 days later for drainage.
12	1871	8	4 wks.	21	21	C.	—	„ „ Catheter tied in 3 days; wound closed 9th day.
13	1883	11	3 days	43	43	C.	Oxalate	Lateral lithotomy 6 days later for another calculus. See Lithotomy Table IV, No. 42.
14	1875	13	?	92	17	C.	"Coffee bean"	Perinæal incision. Admitted with extravasation of urine and sloughing of soft parts; urinary fistula left; at plastic operation to cure this fistula calculus discovered; removed by perinæal incision on 75th day; wound healed in 4 days.
15	1885	13	2 days	29	29	C.	—	„ „
16	1883	21	7 yrs.	57	41	C.	—	„ „
17	1888	38	6 mos.	37	31	C.	Oxalate	„ „ into prostatic urethra, where several small calculi were imbedded.
18	1879	40	2 yrs.	25	25	C.	—	„ „ Catheter tied in 3 days. Wound not entirely healed on discharge.
19	1878	42	6 hrs.	40	40	C.	—	„ „
20	1886	42	4 yrs.	32	20	C.	—	„ „ 2nd operation; failure to find stone (which lay in a pouch of urethra) 1 year previously.
21	1876	60	?	1	1	D.	—	„ „ Came in dying of uræmia, with extensive extravasation. Post-mortem.—Impacted calculi in urethra; abscesses in kidneys, &c.
22	1877	60	?	34	16	C.	Phosphatic	„ „ Catheter tied in. Wound healed 16th day.
23	1884	74	2 mos.	23	22	C.	—	„ „ Calculus in urethra 38 years previously. See Lithotrity Table, Nos. 25, 28, 30, and 32 (same case).

SUMMARY.—A. Total number of cases—23. Number of deaths—1.

B. Arranged according to age:

	Under 16 years.	Over 16.
Number of cases	15	8
Number of deaths	0	1 (dying on admission).
Average duration of residence after operation (excluding fatal case)	38 days (or excluding scarlatina case = 36 days)	27·8 days.

Table X.—*Urethral Calculus, various.*

1	1878	16 mos.	1 day	6	6	C.	—	Calculus near meatus, on division of which extraction easily performed.
2	1887	2	?	1	1	C.	—	Extracted in O. P. room by house surgeon.
3	1875	4	1 week	13	13	C.	—	Expelled by manipulation of penis.
4	1880	4½	2 wks.	14	11	C.	Size of pea	Extracted easily after slitting meatus.
5	1870	5	3 days	46	7	C.	—	,, ,, ,,
6	1888	6	1 day	7	7	C.	—	,, ,, ,,
7	1872	8	4 wks.	21	21	C.	—	Incision of penile urethra, extraction through wound.
8	1880	29	Several years	6	4	C.	—	Three calculi extracted after incision of meatus.
9	1880	66	?	7	7	C.	—	Extracted with forceps.

Summary.—Number of cases—9. Deaths—0. Average residence after extraction = 9·5 days; or excluding Case No. 7 (penile incision) = 8 days.

Table XI.—*Urethral Calculus, Median Lithotomy.*

1	1886	81	4 yrs.	10	8	D.	—	Admitted with a calculus impacted; temp. 101°—103°; stone pushed backwards into bladder, followed by extravasation; median lithotomy performed; parotid bubo formed. Death from cystitis and exhaustion. Post-mortem.—Some small calculi found in bladder.

ANALYSIS OF ONE HUNDRED AND TWENTY CASES

OF

CONGENITAL SYPHILIS IN CHILDREN

SEEN AT THE EAST LONDON HOSPITAL FOR WOMEN AND CHILDREN, SHADWELL.

By RICHARD ANDREWS.

In the following abstract I have endeavoured to classify the symptoms primarily in respect to the part of body affected, putting those more frequently occurring first. As no less than 90 per cent. of the children seen were under two years of age, this table does not give so good an idea of the syphilitic manifestations which appear later in life.

A. *Eruptions on Skin.*

These were by far the most common manifestation, and hardly a case under six years failed to present one or other variety.

The favourite seat of the earliest syphilides seemed to be the buttocks and posterior aspect of the thighs, the rash commonly making its appearance at the end of the first fortnight. In five or six cases it was stated to have been first noticed at a period varying from one to three weeks after the child was vaccinated. A careful examination of the vaccine scars was made in each case, and showed no indu-

ration or other evidence which indicated that the disease had been conveyed by vaccination.

The eruptions may be briefly summarised as follows: the type under which they are placed being founded upon the most general and marked feature of the rash, as the lesions were for the most part of a decidedly mixed character:

1. Ill defined red roseolous rash limited to nates and back of thighs, which, on fading, left the part of a brownish red colour with a tendency to scale; twenty-five cases, all under two years of age.

2. Erythematous type, twenty-four cases. In this class the eruption was markedly symmetrical, and on fading left the usual brown stains. It was particularly obstinate under treatment. In thirteen cases the eruption was fairly general, appearing on nates, backs of limbs, face, and scalp; not on trunk unless mixed. In four cases was erythematous on face and neck, while scaly on limbs and nates. In four cases erythematous on face, while distinctly papular on trunk and nates.

3. Papular syphilides, twenty-four cases, the papules varying much in size, but seldom being minute. This variety seems nearly confined to trunk, nates, scrotum, and limbs. The papules were of well-marked raw ham colour in their early stages, with characteristic coppery tint later. In twelve cases the papules were mixed with some other type of eruption. In ten the eruption became squamous in places, while in two the papular eruption became pustular about the buttocks. In one, a girl aged four, a broad papular eruption about thighs, forearms, and trunk was accompanied by white syphilitic patches on soft palate and inside of cheeks. This was the only case of sore throat observed during the year.

4. Squamous syphilide, eighteen cases. In a few cases this was apparently the remains of an erythematous eruption, and in nearly all it was mixed with papules. In five cases, two of which were above eight years of age, the eruption resembled the ordinary syphilitic psoriasis, and was distributed over body, being more marked on flexor surfaces. In one example it was confined to flexures of knees, elbows, and wrists.

5. Maculæ, eleven cases. Marked staining of buttocks only, two. Trunk generally, five. Trunk and limbs, four.

6. Vesicular eruption. This was noticed in only one case, and was confined to legs and feet.

7. Pustular eruption, three cases. Resembling ordinary impetigo in two. In one case, in which the eruption was confined to the feet, the pustules were very large, and might, perhaps, have been classed as bullæ.

8. Condylomata about anus, eight cases, two occurring in children between four and five years of age. In all other symptoms were associated with the lesion. In four cases there was distinct fissuring about anus, but no condylomata.

9. Eruptions about hands and feet were noticed in nine cases, all in children under two years. In four the hands and feet were peeling. In three the syphilide was squamous, in one vesicular, and in one pustular.

B. *Diseases of Face and Nose.*

1. Snuffling was present or had recently existed in fifty-five cases, all aged under one year. Sunken nose well marked in eleven cases.

2. Lines and fissures at angles of mouth. This symptom does not seem so common as the text-books would indicate, being only noticed in nine cases, five above six years of age.

3. Deformed teeth. The central or lateral incisors were pegged and notched in five cases out of eight above eight years of age. Although the typical syphilitic characters were only seen in the upper incisors, the lower incisors were markedly serrated, though not peg-shaped or showing a distinct central notch.

C. *Diseases of Cranial-bones.*

1. The skull was bossy and irregular in six cases.

2. Distinctly natiform with marked Parrot's nodes, six.

3. Thickened in some places, with marked thinning in others, one case.

D. *Diseases of Bones (excluding Skull).*

1. Epiphysitis, five. Radius, one ; radius and ulna, one ; lower end of humerus, one ; lower end of femur, one ; lower end of tibia and lower end of radius, one.

2. Periostitis, one case, confined to shaft of right femur in a child aged five.

E. *Diseases of Joints.*

Two cases of marked effusion into knee-joint occurred during the year. The swelling had formed slowly, was painless, heat of joint not increased, and no marked thickening of synovial membrane. In one case no thickening of bone detected, in the other decided increase in upper end of both tibiæ. In one case both knees were involved at the same time. Complete recovery took place in both cases under antisyphilitic treatment.

F. *Gummata and Gummatous Ulceration.*

These were comparatively rare, only four cases of gumma being noted, all in patients above four years. Ulceration of nose and soft palate, two cases, in children aged ten.

G. *Diseases of Eye.*

Muco-purulent ophthalmia, five cases. Interstitial keratitis, eight cases, four double, three occurring in children under the age of six.

H. *Diseases of Genital System.*

1. Hydrocele of tunica vaginalis, nine cases, eight aged under three months. In four the hydrocele was double. In no case was the hydrocele tapped, the fluid being absorbed under treatment.

2. Disease of testis, three, one double. In two cases the body of testis only was enlarged and hard; in the other both testis and epididymis were involved.

I should like to point out the frequent occurrence among syphilitic children of a large lax scrotum. It is commonly somewhat œdematous, with tendency to superficial scaling. This was noted in twenty out of sixty cases under one year, but the distinctive features seem to disappear at about this date.

I. *Herniæ.*

Inguinal herniæ, congenital, sixteen cases. This seems rather a large proportion, and its occurrence may bear some relation to the general ill-development and malnutrition of the children.

J. *General Malnutrition.*

Emaciation with aged-looking face was noticed in thirty-five cases.

A careful inquiry into the maternal and family histories of the cases led to the following results: one child was born at seven months, one at six, and one at eight months. In eighteen cases the mothers presented syphilitic symptoms while the children were under treatment. In thirty-six cases some of the other children in the family were either under treatment or had shown marked symptoms of congenital syphilis.

In this analysis I have not tried to draw any conclusions from the facts brought forward, and would only suggest that physicians and surgeons who have large opportunities of seeing this disease should compare the results with their own observations, so that a better record of the more common symptoms may be established.

MICROSCOPICAL CHANGES IN THE ORGANS

FOUND IN A

CASE OF CYANOSIS

WITH

CONGENITAL MALFORMATION OF THE HEART.

By GEORGE CARPENTER, M.B.Lond., M.R.C.P.,
PHYSICIAN TO OUT-PATIENTS TO THE EVELINA HOSPITAL FOR SICK CHILDREN, SOUTHWARK.

The following case of congenital malformation of the heart, which was under the care of Dr. Goodhart at the Evelina Hospital for Children, is not without interest in that it presents some unusual vascular abnormalities of the great vessels, and likewise histological changes in the organs, which as far as I am aware have not been described before ; the changes observed in the lungs accounting for the cyanosis which was a marked feature of the case during life, changes which if found in the lungs of others suffering from cyanosis due to congenital malformation of the heart will render easy the complete understanding of a symptom previously ascribed by writers to different theoretical causes.

With these remarks and without further preamble I propose to give a record of the life history of the case, the appearances observed at the autopsy, together with an account of the microscopical changes found in some of the viscera.

Arthur R. E—, æt. 5½, was admitted into the Evelina Hospital on May 14th, 1886. The family history was good, and there was no history of rheumatism. His mother stated

that she fell from a pair of steps six weeks prior to the birth of the child. A fortnight before his birth she fell down three or four stairs, and a week before she fell on all-fours when running to open the door. As regards the previous history of the child, he had scarlet fever in 1883, whooping-cough in 1885, and measles in 1886. His "skin was quite white," and he had excellent health prior to the attack of scarlet fever, could run about, and had no difficulty whatever in breathing. The blueness came on after this, and with it the clubbing of his fingers. Since the measles he became subject to "fits," but he is said not to have lost consciousness in these attacks.

On admission.—The child is fairly bright, and he laughs and talks. His face is dusky, the conjunctivæ are suffused, the lips blue; moreover the whole of his body is very dusky-looking, the hands and feet blue, the fingers and toes being much clubbed. The pulse is 84 to the minute, irregular, the respirations 24, and the temperature 97° F. The tongue is large, blue, and slightly furred.

On examination.—The cardiac impulse is in the fifth interspace, localised, somewhat weak, and just internal to the nipple line. The area of dulness commences at the third left costal cartilage, and is carried well to the right of the sternum. A blowing systolic bruit is to be heard loudest over the apex, conducted well into the axilla, but not distinguishable at the back; it is just audible under the right clavicle, falls short of the left, and is heard all along the right sternal margin but not very distinctly. The second sound at the base is accentuated.

Lungs.—Both chests are resonant on percussion, and there is a good vesicular murmur.

Liver.—The free margin is felt just below the costal margin in the nipple line.

Spleen normal.

Abdomen natural.

Urine, sp. gr. 1025, acid, contains no albumen.

May 16th.—The child had a fit during the afternoon. He cried for several minutes and was very restless. This was followed by extreme cyanosis; the pulse at the wrist became barely perceptible, the eyeballs rolled up, and the conjunc-

tival reflex disappeared. This condition lasted for about fifteen minutes. He was very sick during the attack.

19th.—He had a similar attack to the above, and was unconscious for an hour or more.

24th.—The patient becomes very blue at times. His bowels are regular, he sleeps well, and his appetite is excellent. On an average he passes ten ounces of urine in the twenty-four hours. Pulse 116 to the minute, respiration 28, temperature 97·2° F. He has been having slight rises of temperature at irregular intervals, the highest noted being 100·2° F.

30th.—He had another fit to-day. This attack consisted of a good deal of convulsive twitching of the arms and forearms, a condition half crying, half groaning, and a frequent increase of the crying coming on in fits as if he were in pain. The pupils oscillated slightly, but on the whole were fairly fixed. His pulse remained steady all the time at ten, sometimes eleven beats in the five seconds. A nitrite of amyl capsule was placed under his nose, but it made not the least impression on his pulse, with the reservation perhaps that it became a trifle more full. He soon passed into a quiet sensible condition. The child was apparently insensible during the attack.

June 2nd.—His temperature has been rising for the last two days, and this morning is 103° F. He has a rash consisting of slightly elevated reddish papules, showing a tendency to run in patches ; seen on the trunk generally. He is very drowsy, and complains of headache. Transferred to Infectious Block.

5th.—The rash has entirely disappeared. He complains of headache, and his face becomes very blue at times. Temp. 97·8° F.

8th.—The child has been restless and fretful for the last two or three days, and yesterday for the first time slight choreic movements were noticed in the arms and legs. His breathing is decidedly more easy than it was, and he is less cyanotic.

11th.—To-day the choreic movements are well marked both in the face and limbs, and there is a note to the effect by the nurse that slight movements have been observed

during sleep. The patient has on several occasions passed water in the bed. During the last few days the systolic bruit has become much more marked and is now very loud, audible at the angle of the scapula and more or less all over the chest. The point of greatest intensity is the third left interspace close to the sternum.

14th.—The choreic movements are on the decline. He passes water in his bed on an average once a day. Temp. 100° F.

20th.—The choreic movements are much about the same. His face still becomes very blue at times, and at others is very flushed.

July 8th.—Since June 24th the patient has been free from the attacks of cyanosis. His choreic movements are slight though still evident. He is much brighter. His evening temperature is usually about 101° F., and the morning 98° F. He was taken home by his mother.

On July 28th he was readmitted into hospital, and a note of his condition is as follows :—The choreic movements are marked. The systolic bruit is not quite so loud as on discharge, and is now not distinctly audible at the angle of the scapula. The point of greatest intensity is the third left interspace just internal to and below the nipple. His face is liable to sudden flushings, which are transient. As regards the cyanosis he is much as before.

He remained in hospital until September 1st. The choreic movements gradually diminished, and he was fairly free from them at the time of discharge. The bruit remained much about the same as on readmission.

The child was again readmitted on March 29th, 1888, and his condition was then as follows :—The cyanosis is extreme, there is much dyspnœa accompanied by nervous twitchings of the hands, and he breathes with widely opened mouth. The pulse is feeble, compressible, 106 to the minute ; the respirations 28. As regards the heart no bruit can be heard. The lungs are resonant, but the breath sounds behind are more distinct on the left side than on the right. The liver dulness commences at the sixth rib in the nipple line, and its free edge is felt just below the ribs in that line. The spleen is normal, the abdomen natural.

April 7th.—The patient had an attack of dyspnœa, his eyes became "glassy," and he complained of pain in the chest and head.

14th.—This morning at 7.30 he suddenly became rigid and unconscious. The rigidity lasted not more than a minute, but he remained unconscious. At 9.45 a.m. he was still unconscious, intensely cyanosed, the eyes being open. There were movements of closure and retraction of the upper lids. He lay on his back with frothy saliva issuing from his mouth, groaning in a treble key as if distressed or in pain. The head was turned to the left slightly, the chin being raised a trifle. The elbows were chiefly flexed with occasional slight clonic convulsions, superseded now and again by tonic contractions. The respiratory movements were violent, the neck muscles being called into action. The chest movements as also the abdominal were free though exaggerated and somewhat irregular. The legs were rigidly extended, the position of the feet that of talipes equinus. The eyes were turned to the left, the pupils dilated, the right not acting to light, the left after a long interval, slowly, and then not much. The conjunctival reflex was absent. As regards other reflexes, there were ankle- and knee-clonuses. He was insensible to pricking of the extremities or trunk. Examined with the ophthalmoscope the fundal appearances were as follows :—The veins were *very* large, the arteries of good size. Both sets of vessels were most intensely corkscrewy. There was no edge to the optic disc, the red reflex apparently starting from the physiological pit.

At 11.45 he was still in the same condition. The respirations were noisy, forty-eight to the minute. The eyes were half open. The thumbs were flexed into the palms, the elbows flexed convulsively every second or two.

He remained in much the same condition until his death, which took place at 9.30 a.m. on April the 15th. A slight cough was noticed for the first time the night preceding his death.

At the autopsy the heart weighed three ounces and a half. The left ventricle was hypertrophied and dilated, the right the same, but dilatation was in excess of the hypertrophy. The right auricle was twice the thickness of the left, but the

left was dilated, and the right auricular appendix four times the size of its fellow, which was decidedly small. There was patent septum ventriculorum sufficient to admit the index finger; the foramen ovale was closed. The pulmonary artery was rudimentary. It contained two well-formed but small valves; below these there was stenosis, and above them its diameter was that of a crow-quill. The aorta was given off from the left ventricle, but it passed over the right bronchus instead of the left. From the arch at its posterior aspect a large vessel was given off, and almost immediately bifurcated into trunks of equal size, of the capacity of a pen-holder. In the centre of the main trunk was a narrow ridge running parallel to its direction, and meeting another similar ridge at right angles, marking its starting point from the aorta. The lower trunk ran horizontally and disappeared at the root of the lung passing in front of the left bronchus. From this trunk near its centre another vessel, of the diameter of a crow-quill, was given off which passed to the root of the right lung, and was lost to view there, its situation being in front of the right bronchus.

From the top of the arch two vessels arise, somewhat smaller than the bifurcated trunks. One of them is situated on the opposite side of the vertical ridge previously mentioned, the other taking origin three quarters of an inch to the right of this.

Unfortunately, the notes do not make any mention of the further destination of these three vessels, so that their exact anatomical distribution cannot be given. The aorta in its further course does not give off any branches until well below the root of the lung, and the first noticed is a small one to the œsophagus. The pulmonary veins are perfectly natural as regards their terminals.

Lungs.—The left lung was much congested, but crepitant. Here and there some minute, solid areas were distinguishable, and a quantity of greyish black pigment mottled the cut surface. Taken as a whole it was perhaps firmer than natural. The pulmonary veins were very large and very evident as far as the pleural surface. They appeared as single, dichotomously branching channels. As regards the right lung, the appearances observed were much about

the same, but in the lower posterior part of the upper lobe there was an infarct the size of a walnut.

As regards the other organs, nothing particular was noted about them, with the exception of their being much congested. Microscopical examination of the various organs revealed the following:—To commence with the *lungs*, in portions which are the least altered, the appearances observed are very various. Here are seen dilated, thickened, and tortuous capillaries, admitting from three to six red corpuscles abreast, in such close approximation that under a low power the alveolar cavities are with difficulty picked out, so narrow are they, and when found their shapes are very various (*vide* Fig. 2). Scattered through such an area are small masses of pigment contained in large cells. In portions less affected the same tortuosity of capillaries is a marked feature; but here the alveoli are more distinct, and they approach the normal capacity of these chambers. In some instances the alveolar walls are represented by tortuous capillaries alone, apparently; in others fibro-nuclear tissue in varying quantities is to be seen. In many of the capillary walls an indistinct fibrillation is to be detected. In other sections the same enlargement of capillaries is observed, but the capillary walls are much thickened, fibro-nucleated, and crammed with red corpuscles. Irregular masses of pigment and pigment granules in cells are seen in the alveolar representatives. This condition of affairs is observed not far from, and reaching to, the pleura, which is thickened. Pigment is also seen in the pleura.

Again, small areas of dilated vessels lying in fibro-nuclear tissue can be seen scattered thickly, in which are many irregularly-shaped masses of black pigment of varying sizes, mostly twenty or thirty times that of a red corpuscle, a few being many times larger than that even, standing out rock-like.

In places the fibrous tissue is in excess, in others small portions can be detected, which are entirely broncho-pneumonic. Other small areas, again, are typically broncho-pneumonic, and mixed with these products in the alveolar cavities are crag-like masses of pigment, such as have been previously described; also many of the cells contain varying quantities of pigment granules. Other sections show

areas containing alveoli full of blood, the alveoli being more or less perfect as regards shape, but the capillaries are very large and very tortuous. In some fields, in addition, broncho-pneumonic products mixed with the blood are noted, and the cells contain varying quantities of pigment granules in their interior. In other parts remnants of capillaries and alveolar walls, scattered through a sea of blood, is all that meets the eye. The small bronchioles corresponding are then seen to contain blood and inflammatory products. When such an area is examined under a high power, the capillaries are seen to be thickened, tortuous, boldly nucleated, and containing from two to four red corpuscles abreast. Again, vessels of large calibre, slightly thickened, and evidently made of fibro-nuclear material, are observed. In the alveolar wall remnants, fibro-nuclear tissue is to be seen here and there.

Turning one's attention to the bronchioles, when large, these are seen to be accompanied by a single vessel, which is for the most part much larger than the tube itself. This vessel is one of the radicles of the pulmonary veins. The bronchiole is not apparently accompanied by any other vessel. In some few sections there were two vessels, but these were both in structure rather veins than arteries. In addition to this, however, the bronchial tubes are seen in company with multilocular chambers, in place of a single vein, which are crammed with blood. These chambers contain from two to six canals or more ; they are made of fibro-nuclear tissue, in which muscular elements are seen, and appear there whether noted in horizontal or transverse section (*vide* Fig. 1). (Fig. 1 shows also an area of blood with capillary-wall remnants and capillaries. To the left of the multiloculated chamber is a bronchiole containing blood and inflammatory products. Above this is a small area made up of broncho-pneumonic cells, and other similar cells are seen scattered irregularly through the specimen, together with white corpuscles. The vacant spaces are purely artificial, owing to falling out of their contents during manipulation. They are not alveolar cavities.) For the most part they are within measurable distance of the pleural covering, which is thickened, in places very vascular, showing here and

there minute multilocular cavities. The bronchial tubes vary according to the portion of the lung in which they are situated. In some cases they are quite healthy; others show inflammatory changes in the mucous membrane; and again, others contain blood in addition to inflammatory products. In some sections the vessels of the bronchial *tubes* are seen to be very large; in others no great fault can be found with them. Many of the bronchioles show masses of pigment in their walls, and pigment is seen in the walls of the veins and their multiloculated chambers of origin.

The kidneys.—Taking the cortical portion first, the capsule is found of natural thickness, but the stellate veins are engorged with blood. The interglobular veins are very large, and capillaries are to be detected here and there capable of admitting three or four red corpuscles abreast. The Malpighian corpuscles are enlarged, the capillaries dilated, crammed with red corpusles, presenting thickened walls, the nuclei in consequence appearing somewhat scattered; whereas for the most part the afferent artery admits but from two to three red corpuscles abreast, the efferent vein is enormously dilated and contains seven, presenting much the appearance as regards size of a small wrist attached to a fist, the glomerulus being taken to represent the fist. The remainder of the cortex requires but brief notice, but little fault can be found with it, and there is no increase in its stroma. As regards the medulla the stroma is greatly thickened, fibro-nuclear in character, the nuclei being more or less elongated. The collecting tubes are in the minority in some parts, in others this is not the case; their epithelium is natural. The larger portion of the network formed by the stroma contains red blood-corpuscles, the vasa recta being greatly increased in size and thickness (*vide* Fig. 3).

As the papilla is neared, the capillaries are found to be very large and tortuous forming free irregular anastomoses; they can be seen with the greatest distinctness under a low power. Their nuclei are bold, their walls thick, in diameter somewhat irregular, and they contain from two to six red corpuscles abreast.

Microscopic sections of the *liver* show the intralobular veins to be thickened, likewise the sublobular, their walls

being made up of well-marked fibro-cellular tissue. The portal veins, too, seem large in comparison with healthy specimens, and they are also thickened.

The intervening capillaries are large, admit from two to five red corpuscles abreast, and their walls are thick. The interspaces between them and the liver-cells are larger than natural. Inasmuch as the capillaries are dilated, the corresponding liver-cells are in equal measure attenuated; but in structure and micro-chemical reactions they appear to be perfectly healthy. With the above exceptions the liver is normal.

Sections of the *skin* to a considerable number were examined, but nothing abnormal was detected. The *spleen*, too, was healthy as far as microscopical investigations go. Sections of the *brain*, which was found intensely congested at the autopsy, showed marked capillary dilatation and engorgement. Portions of the convolutions were examined. In the cortex the capillaries, which were very numerous and very tortuous, were seen cut in all directions. The majority of them admitted from two to six red corpuscles abreast, and some more than that even. Many of them were evidently lying in perivascular spaces, but in others this relationship could not be determined. They all had thickened walls, and in the larger there was a marked tendency to fibrillation. As regards the medulla, the behaviour of the capillaries was identical, with the reservation that they were not quite so numerous. The nervous tissue appeared healthy.

In examining sections of the *heart*, no difficulty was experienced in detecting the capillaries, although they were empty, and in some fields they were decidedly large and tortuous. The muscle-fibres looked perfectly natural.

As is well known, there are two theories as to the causation of cyanosis in these cases: one, suggested by Morgagni, that this condition is due to general congestion; and the other by Hunter, ascribing the appearance to the intermixture of the venous and arterial currents of the blood.

In the case which has just been described the child was to all intents and purposes provided with one ventricle only, and the venous and arterial blood must have been of necessity mixed.

When one takes into account, however, the condition of

the lungs, the great dilatation and tortuosity of the capillaries, quite apart from the other changes mentioned, the cyanotic condition no longer becomes an enigma; and I venture to think that in cases of cardiac malformation where cyanosis is a symptom the above condition of affairs will be found to be the real cause, coupled with general venous stagnation; for not only is the capillary enlargement noticed in the lungs, but it is seen to be a more or less universal condition. Possibly the elasticity of the skin brings about a post-mortem emptying of the vessels which would quite account for the absence of capillary dilatation in this structure previously noted.

The hypertrophied right *heart* shows, too, how great an impediment there was to the flow of blood through the patent septum leaving its mark on the liver, kidneys, retina, brain, &c., and doubtless elsewhere in the shape of capillary thickening and dilatation which must have still further increased the tendency to venous stagnation and engorgement generally.

Morgagni's suggestion, then, that the cyanotic condition is due to general congestion is not very wide of the mark as far as this case is concerned.

That at one time the existing vascular arrangements were sufficient for the needs of the economy is borne out by the fact that there were no symptoms of the disease until the child was two and a half years of age, at which time he passed through an attack of scarlet fever; but this, together with the greater demands made upon the vascular apparatus owing to a more active existence, brought about its gradual failure together with the subsequent changes previously enumerated.

The capillary dilatation of the glomeruli is not without interest from a physiological point of view, seeing that he passed very small quantities of urine, and it helps to illustrate the fact that the flow of water is dependent upon the arterial tension in the glomeruli, which here must have been very low. What is somewhat remarkable is the fact that the urine at no time contained albumen.

The condition of the liver, too, is interesting in that it shows a marked change from that of nutmeg liver, which is, comparatively speaking, much more rapidly induced, though the causation in both is, practically speaking, identical.

Another point worthy of remark is the disappearance of the bruit on his final readmission. Cardiac failure will possible account for this feature of the case.

Finally, dropsy was not noticed at any time. Theoretically this should have been present?

PLATE

Illustrating Dr. George Carpenter's paper on the Microscopical Changes in the Organs found in a Case of Cyanosis with Congenital Malformation of the Heart. (For description of figures see paper).

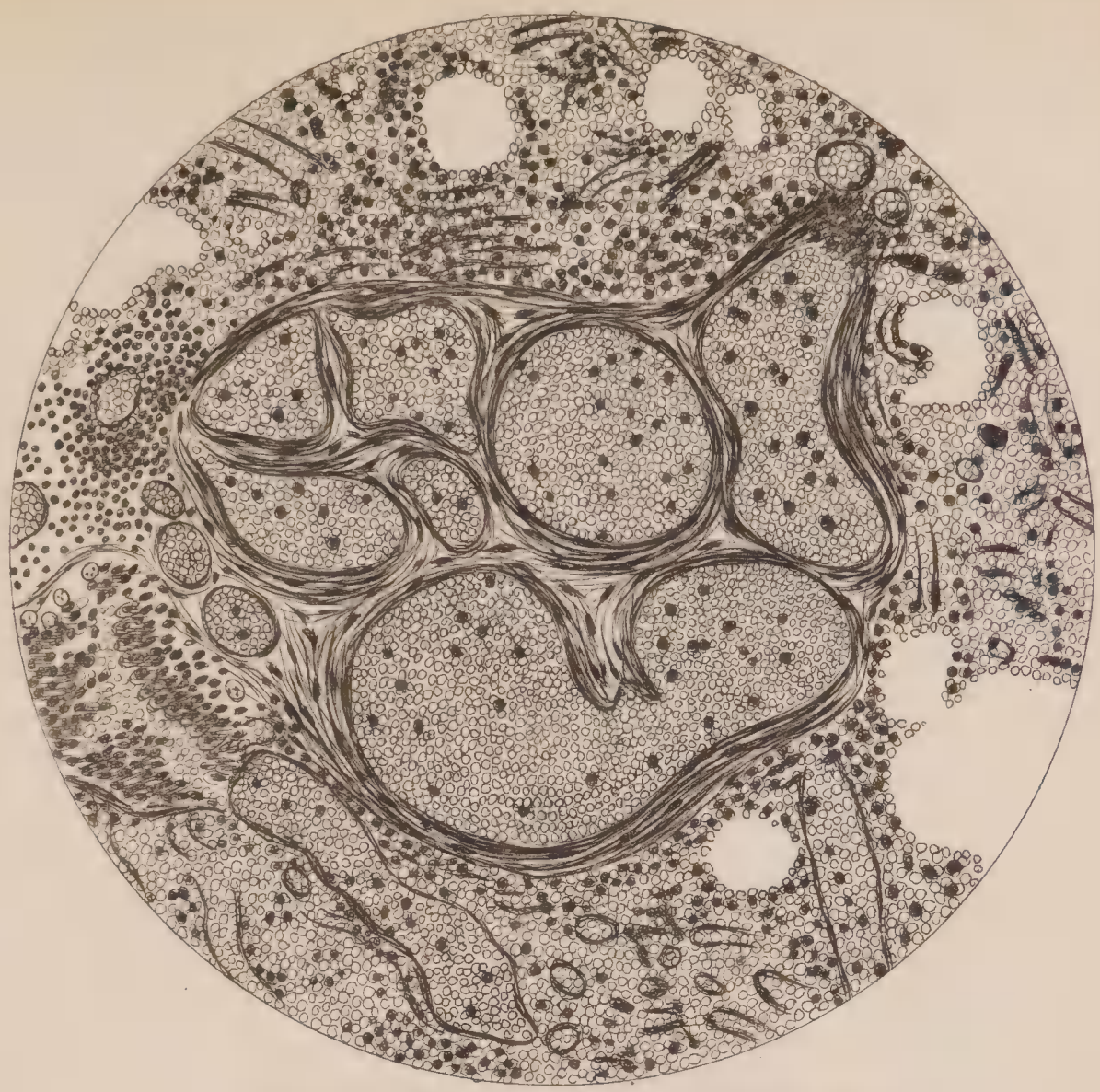


Fig.1. Lung. Leitz Obj.4 Oc.3.

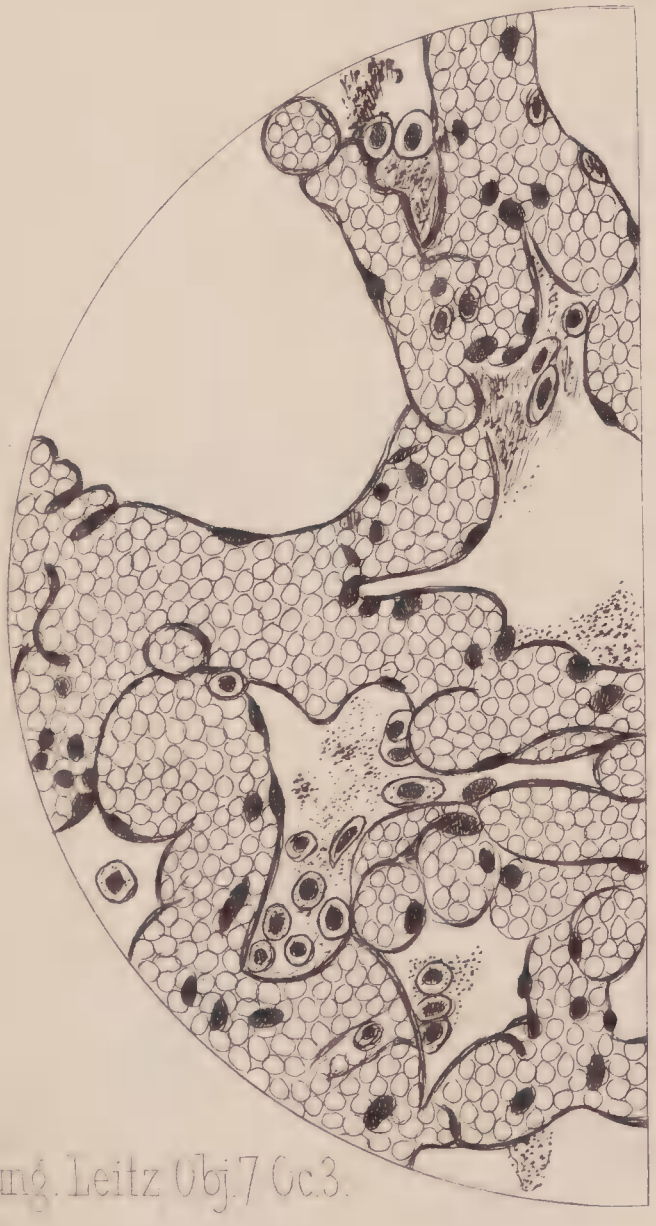


Fig.2. Lung. Leitz Obj.7 Oc.3.

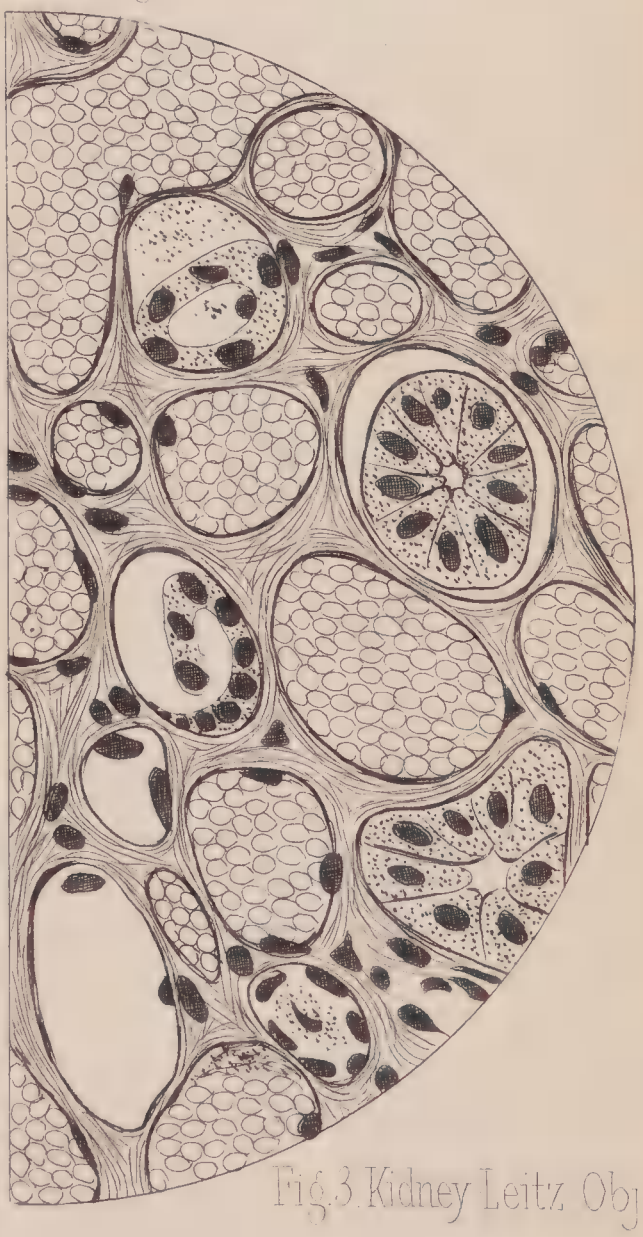


Fig.3. Kidney Leitz Obj.7 Oc.3

George Carpenter, del.

Danielsson & Co. sculp.

CASES OF CARBOLIC-ACID POISONING.

By HECTOR W. G. MACKENZIE, M.D.Cantab., M.R.C.P.

Of the following cases of carbolic-acid poisoning, the first is specially interesting on account of the development, towards the end of the first week of the illness, of amaurosis, delirium, and a scarlet rash, and the second on account of the evolution of acute pneumonia.

Amaurosis has only once before, I believe, been recorded as produced by carbolic acid. The case was reported by Nieden.[1] Soon after the pleural cavity had been syringed with a carbolic-acid solution, unconsciousness and collapse ensued, and when they passed off complete amaurosis with dilated and almost reactionless pupils remained, lasting some twenty hours.

Amaurosis, as the result of quinine,[2] is of course not extremely rare. Most of these cases have occurred in the subjects of malaria for which the quinine was given, and, had it not been for other evidence, the amaurosis might have been thought to be due to the malarial poison and not to the quinine. Giacomini's[3] case, however, settled this point once for all. A healthy young man took by mistake three drachms of sulphate of quinine instead of cream of tartar. Within an hour he had great pain in the head and dizziness, and finally became collapsed and unconscious, with dilated

[1] 'Berl. klin. Wochenschr.,' 1882, xix, p. 748.

[2] Gruening, 'Knapp's Archiv,' 1881; Browne, 'Trans. Ophth. Soc.,' 1887.

[3] Gruening, op. cit.

pupils. When consciousness returned, he was totally blind and deaf. His recovery was slow. Here there could be no doubt as to the cause. But even without such conclusive proof the constancy of the symptoms, of which amaurosis is one, and their rapid development after the quinine, are in themselves almost sufficient to establish their dependence on it as the cause. The history of such cases is that soon after the large dose of quinine unconsciousness sets in, sometimes accompanied by convulsions,[1] and when consciousness returns it is found that the patient is quite deaf and blind. The hearing generally returns soon, while the blindness lasts from three days to seven months, recovery being rapid when it commences. Other drugs such as morphia,[2] bisulphide of carbon,[3] and, perhaps, belladonna.[4], have been noted as giving rise to amaurosis. Santonin, salicylic acid, and bromide of potassium are also mentioned by Bergmeister.[5]

The amaurosis in my case differs from all others of which I have read, inasmuch as it did not come on until six days after the poison was taken, and that it was accompanied by delirium and slight fever, and followed by an erythematous rash. It may possibly be suggested that it was uræmic in origin, as the urine contained a little albumen. If it were so the uræmia was the effect of the carbolic. It is important to bear in mind that the child in whom it occurred was naturally highly excitable and of unstable nervous equilibrium, as shown by the fact that she took the acid to make away with herself.

As regards the cause of the amaurosis in such cases, I think that it is probably cerebral in origin, and perhaps due to the influence of the poison on the occipital lobes. This seems to me more likely than that it is due to a local action on the retina, or that it is the result of vaso-motor disturbances.

Rashes have not very often been recorded as produced by carbolic acid. They are not mentioned in Van Harlingen's[6] monograph on drug eruptions, although he refers to salicylic rashes of an erythematous character. The rashes in these

[1] Gruening, op. cit.

[2] 'Ophthalmic Review,' 1888, and 'Berl. klin. Woch.,' 1887.

[3] 'Trans. Opth. Soc.'

[4] 'Brit. Med. Journal,' Sept., 1861.

[5] 'Wiener Med. Blät.,' 1886.

[6] 'Archives of Dermatology,' Oct., 1880.

cases were two of the brightest I have seen. In the first case it commenced as a bright scarlet on the upper extremities, and then affected the back, the feet, and the legs.

It is interesting to notice that all the drugs which have so far been recorded as producing amaurosis also cause rashes—quinine, salicylic acid, morphia, belladonna notably so. Moreover, quinine, carbolic acid, and salicylic acid are antipyretic. The rash produced by antipyrin is well known, and it would not be surprising if it were added to the list of drugs producing amaurosis. These rashes, like amaurosis, I believe to be of nervous origin.

With regard to the rashes occurring in acute rheumatism while salicylates are administered, there is always the difficulty of knowing whether they are due to the drug or not. Erythematous rashes were certainly known in acute rheumatism before the salicylic treatment was introduced. In this connection I have thought it worth while to report a case where the erythematous rash developed in a case of diphtheria treated with sulpho-carbolates internally, and with a spray of salicylate of soda and carbolic acid applied to the fauces.

Curiously enough, while desquamation did not occur in the first patient who developed the rash, at any rate not during the four weeks she was under observation, it was observed in two cases without rash. In one of the latter it occurred at the end of four weeks, and was general; in the other it commenced on the eighteenth day, and was confined to the hands. In the former case one had to consider whether the patient had not possibly had scarlet fever. A brother of the patient's had been ill with scarlet fever. The child had been ailing before he took the poison, although he had continued to attend school up till that time, but there was no history of sorethroat or of rash before the poisoning. On account of this uncertainty, the desquamation can only be said to have been possibly due to the poisoning. In the second case there was no suspicion of scarlet fever.

Bronchitis is recognised as a not uncommon result of this form of poisoning, and it occurred in two of the four cases.

Acute pneumonia as the result of carbolic acid poisoning has been previously recorded, and is referred by Coats[1] as

[1] 'Manual of Pathology.'

specially interesting, and showing that pneumonia can be produced by a poison circulating in the blood. In the case I shall report, it was not until the twelfth day after the poison was taken that the pneumonia set in. It began suddenly with rapid rise of temperature and vomiting, and ran through a typical course of some twelve days' duration, the part of the lung affected being the right apex. This case has some analogies with the first case. In both, after recovery from the more immediate effects of the poison, there was a period of latency before the poison produced its effects—in the one case on the brain, in the other on the lung.

I have to thank Dr. Stone and Dr. Ord, under whose care these cases were, for permission to publish them here.

Case 1. *Poisoning with carbolic acid; collapse; albuminuria; delirium and amaurosis on the sixth day; scarlet rash on the eight day; recovery.*—Sophia S—, æt. 12, was brought to St. Thomas's Hospital at 11.30 a. m. on March 10th, 1885, having about an hour before swallowed an unknown quantity of carbolic acid. Her face was pallid, her lips livid, her extremities cold. She was quite unconscious. The pupils were small and inactive to light, the pulse was almost imperceptible, and the breathing was laboured and rapid. On the sides of the mouth and neck there were brown stains, but the tongue was not discoloured. The breath had a strong odour of carbolic acid.

The stomach was at once thoroughly washed out with warm water. The washings smelt strongly of carbolic acid at first, and the washing was continued until the fluid returned was quite odourless and colourless. Half a pint of olive oil was then injected into the stomach, two ounces of brandy were given per rectum, ether was injected subcutaneously, and hot bottles were applied to the extremities and trunk. The pulse soon became stronger, the breathing quieter, and the temperature rose from 95° to 98·4°. The patient gradually recovered consciousness, and in the evening was able to ask for water and to swallow milk without difficulty. Her only complaint was of slight pain where the acid had injured the skin. The urine, as well as the fæces, were at first passed into the bed, and a specimen of the urine was not

obtained till the 12th. No trace of carbolic acid could then be found in it, but it contained albumen, and a little pus.

She steadly improved until the 16th, when some interesting nervous symptoms developed themselves. She became very lethargic, and took no notice when spoken to, although she would sit up in bed at times and shout for "teacher," "lady," and "nurse." Next day she appeared to be quite blind. Whether lying down or sitting up in bed she would stare vacantly round without fixing her eyes on any particular object. She said she saw nothing. The eyelids did not blink when the fingers were flipped in front of them, or when a bright light was suddenly brought before them in the dark. The pupils were dilated. My impression is that they did not act to light at first, but this fact is not recorded. On the 20th I noted "pupils dilated and act to light," but the amaurosis was then passing off. On this date she could recognise a bright object, such as a lighted candle, when held before her eyes; but when a dark object such as an inkstand was held up, she said she could see nothing. The same afternoon, however, she was able to recognise her friends when they came to visit her, and next day her sight was normal.

While the amaurosis lasted, which was four days, she was at times somewhat delirious and noisy, singing loudly, or shouting out, as has been said, for the "teacher," and "lady." She slept, and took her food fairly well, but she passed her evacuations unconsciously into the bed. I examined the eyes with the ophthalmoscope on the 20th, and found the fundi normal.

Another point of interest about the case was the development of a bright red rash on the evening of the 18th—that is, eight days after the poison was taken and two days after the onset of the amaurosis. The rash first appeared on the hands, and wrists, which became of a uniform bright red colour. Next morning there were similar patches over both elbows. On the forearms, on the back, the buttocks, and about the knees, the eruption consisted of small red spots, separated by normal skin.

On the 20th the rash had faded from the hands and arms, but remained of a bright red over the back and buttocks, the separate spots having been replaced by uniform red patches.

The rash had also made its appearance on the feet and legs. The feet were now of a uniform bright red colour, as the hands had been before. On the legs there were numerous red spots, while on the knees there were red patches. The rash had faded next day, and completely disappeared in a day or two. No desquamation occurred during the fortnight the child subsequently remained in the hospital.

The temperature for the first three weeks always went up at night. For the first four days the evening temperature was only about a degree above normal, but when the nervous symptoms developed it was usually from two to three degrees above normal, while the morning temperature was normal or only a degree or so elevated. There was no bronchitis in this case. Beyond the acceleration and the feebleness, there was nothing remarkable in the pulse, which remained quite regular. There was not at any time impairment of appetite, and sickness only occurred once. There was some diarrhœa at first, when the stools were of a dark green colour, and this looseness of the bowels returned on the 20th, and lasted till the 31st. The urine, as has been said, when it could be examined, never gave a trace of carbolic, but a little albumen and pus were present on the 12th. When it was again possible to examine it, after the nervous symptoms had passed off and the loss of control ceased, the albumen had disappeared.

The patient left the hospital on April 5th perfectly well.

Case 2. *Carbolic acid poisoning; inflammation of fauces; bronchitis; acute pneumonia on the twelfth day; desquamation on the twenty-eighth; recovery.*—James W—, æt. 4, was brought to St. Thomas's Hospital on October 3rd, 1887, within half an hour of having swallowed about two tablespoonfuls of a strong solution of carbolic acid. There was no collapse, but the temperature was 96·6°, the pulse 120. The pupils were neither dilated nor contracted, and they reacted to light. The breath smelt strongly of carbolic acid. The uvula and fauces were swollen and tender. The lips and chin were blistered but the tongue was clean. The boy said he had pain in swallowing. The urine was smoky-looking and free from albumen.

The mother said the boy had been ailing for about a fort-

night, but had continued at school. One of her children was at the time ill with scarlet fever.

Next day the tongue was coated with a thin layer of flaky membrane. The uvula, soft palate, and tonsils were much congested, and the latter were enlarged and covered with a layer of dirty white exudation. The glands at the angle of the jaw were enlarged. The exudation soon disappeared, so that on October 9th there was none to be seen, although the tonsils were still red and swollen. The temperature was normal until October 7th when it rose to 101·6°, and varied between 102° and 98° during the next three days. This febrile temperature was due to slight bronchitis, which lasted for five or six days.

The pulse was over 110 from the first day, but on the seventh it became very irregular, and the irregularity persisted for three days.

On October 14th the patient was sick, and the temperature quickly rose from normal to 104·2°. This marked the onset of an attack of apical pneumonia. On October 16th there were distinct physical signs at the right apex, tubular breathing and pectoriloquy, dulness and crepitations from the apex to the fourth rib, in front and behind. The urine had previously been free from albumen, but now there was about one sixth albumen, and in the deposit there were found red blood-corpuscles and fragments of casts. The pulse was 150. The temperature continued febrile some twelve days, returning to the normal on the 27th, and remaining normal after that date. The physical signs, as is not unusual in cases of apical pneumonia, disappeared more slowly, and did not commence to clear up until November 3rd. The albumen disappeared from the urine when the fever left.

Desquamation was noticed on November 3rd, at the corners of the eyelids, at the sides of the mouth, near the axilla, on the front of the chest, over the thighs, legs, soles of feet, and fingers.

The child made a good recovery and left the hospital well on December 4th.

Case 3. *Carbolic-acid poisoning ; collapse ; bronchitis ; numbness and anæsthesia of little and ring-fingers of left hand ; des-*

quamation of both hands; recovery.—Catherine T—, æt. 42, on February 24th, 1884, drank some carbolic acid, at the same time spilling it over her clothes, and was brought up to the hospital soon after quite unconscious and breathing stertorously. Her clothes about the waist were soaked with some fluid smelling strongly of carbolic acid. In the right iliac region was a large, white, thin parchment-like patch twelve inches in diameter, having a red circumference. There was no lividity. Pupils normal in size, equal and immovable. Conjunctivæ quite insensitive. Extremities warm. The inside of the mouth looked healthy, and there were no signs of injury about the lips or chin. Pulse 120, regular, of fair strength. Temp. 95·8°.

The stomach-pump was used, brandy enemata and ether injections administered, and consciousness gradually returned. She vomited several times during the first twenty hours, and the bowels were opened several times, the motions being distinctly carbolised.

On the 25th it was noticed that the lips had been scorched, and that the tongue was blistered. The patch in the right iliac region was now of a dark brown colour, smooth, and painful to touch at the edges. She suffered from bronchitis, giving rise to a troublesome cough for about a week.

The temperature gradually rose from 95·8° on admission to 101·6° on the evening of the next day, returned to normal on the third day, but again rose slightly on the fifth day, and did not become uniformly normal until March 9th, the thirteenth day of the illness. The cause of this febrile temperature was, however, probably the burn in the right iliac region, which sloughed and left a suppurating wound, which took time to heal.

Desquamation of both hands was first noticed on March 10th, Numbness of the little finger and of the ulnar side of the ring-finger of the left hand with some anæsthesia was also noticed first on March 10th. This lasted until the 17th.

The patient left the hospital well on March 28th.

Case 4. *Diphtheria treated with sulpho-carbolates internally, and with a spray to the fauces of salicylate of soda and carbolic acid; development of erythematous rash.*—M. A—, a girl

æt. 13, took ill on November 1st, 1888, with sorethroat. On November 2nd, when admitted to the hospital, the tonsils were much swollen and congested, and there was a patch of membrane on each of them. It was ordered that ten grains of sulpho-carbolate of soda should be taken every four hours, the throat being sprayed every four hours with a solution consisting of twenty grains of salicylate of soda and twenty of carbolic acid dissolved in an ounce of water. On November 5th—that is, after three days of the sulpho-carbolate treatment—a rash made its appearance, consisting partly of bright red erythematous patches and partly of raised papules of a rather dusky red colour. The rash was not quite symmetrical. The skin over the right pectoral and the left deltoid, the right flank, the fronts of the thighs, the buttocks, and the upper half of the back were of a uniform bright red colour. There was a more or less papular eruption, mingled with smaller erythematous patches, over the arms and legs and the left flank.

Next day the rash had nearly faded on the body and arms, but there were some very red and raised blotches on the legs and inner sides of the knees.

On November 8th a number of raised red patches, like erythema nodosum, appeared on both legs. By November 15th the patches on the legs had faded. They were at no time painful.

Case 5. *Poisoning by carbolic acid; cyanosis and drowsiness; scarlatiniform rash on second day; recovery.*—Thomas B—, æt. 5, was admitted to St. Thomas's Hospital on May 26th, 1889. About five hours previously he had taken some carbolic acid, quantity unknown. An emetic had been administered, and he had vomited. He was said to have been very stupid and drowsy ever since. At times he could not be roused at all. Some urine which he passed was said to have been quite black.

When admitted he was very drowsy, and could not be roused to answer questions. His face was of a bluish tinge, the cheeks having the brightest colour. Pulse 95. Temperature normal.

Next morning, twenty-four hours after taking the poison,

his face was deeply flushed, and there was a bright red rash over the upper part of the chest and all over both legs and thighs. Within twenty-four hours more the rash had disappeared.

The urine passed on the morning of the second day was of an olive colour and free from albumen. In the evening it was normal in character.

The patient left the hospital on the third day, well.

REPORT

OF THE

DEPARTMENT FOR DISEASES OF THE SKIN, 1888.

By WILLIAM ANDERSON, F.R.C.S.

Amongst the cases occurring during the year the following are deserving of comment:

1. *Crateriform ulcer.*—An epithelioma of the cheek, with the characteristic crateriform shape described by Mr. Hutchinson, appearing in a man aged 67. It was of very rapid growth, and attained a diameter of an inch and a quarter within eight weeks from the date at which it was first observed, but it was unattended with any apparent glandular enlargement. After excision of the growth, the wound cicatrised rapidly, and the patient remained well until about five months later, when the glands behind the vertical ramus of the inferior maxilla began to enlarge. The case was subsequently lost sight of. The histological appearances of the excised tumour were those of ordinary squamous epithelioma. (For full report, see 'British Journal of Dermatology,' September, 1889.)

2. *Lupus of face,* commencing after the age of 50. The patient, a spinster, æt. 52, came under treatment for a lupus of the face of two years' duration. The disease had already been attacked by erasion and Unna's salicylic and creosote plasters without any lasting good result. There was a family history of tuberculosis, but the patient appeared to be in fairly good health.

On admission the lesion extended symmetrically over the nose and cheeks, forming a butterfly patch like that frequently seen in lupus erythematosus, but in other respects it resembled common lupus. It was of a dark reddish colour, tuberculated at the margin, and the diseased tissue, which was of considerable depth, yielded to the curette in the characteristic manner. A circular patch of similar character, and about two inches in diameter, was present upon the right buttock. The patient was taken into the hospital, where the growth upon the nates was excised, and the facial disease removed as completely as possible by erasion, the raw surface being covered with chloride of zinc paste. The buttock wound healed readily and permanently, and for a time the face progressed well, but at the end of three weeks signs of renewed growth appeared upon the cheeks and nose. The patient absented herself for a month after her discharge, and when she returned the whole of the previously cicatrising area was covered with lupus tissue. Shortly afterwards an ulcer of tubercular character formed at the anterior fold of the right axilla, and another was found on laryngoscopic examination above the vocal cords. A further and very thorough erasion of the facial disease was performed, but again with only temporary benefit.

The primary occurrence of lupus vulgaris at so late an age is very rare, and it is interesting to note that the disease upon the face imitated lupus erythematosus in its seat and symmetry.

3. *Acne hypertrophica of nose and adjacent parts.*—The patient was a healthy man, aged 20, of fairly temperate habits. The nose was enormously swollen, and the disease, which had the usual characters of the glandular variety, extended upwards over the glabella, and laterally upon the cheeks. The affected integument was excised from the nose, and the more peripheral and less advanced parts of the disease, were treated by free scarification. The result was very satisfactory. The preparation is preserved in the St. Thomas's Hospital Museum.

4. *Chancres of face.*—Of these there were three examples, one (M.) on the right cheek ; one (F.) upon the lower lip ; and one (M.) upon the eyelid. In all, the lesions were at-

tributable to contact with the secretion of mucous tubercles. In the first case the sore had a peculiarly malignant aspect. The details have been reported in the 'British Journal of Dermatology,' January, 1889, and in the 'Monatshefte für Prakt. Dermatologie.'

5. *Pigmentary patches.*—One example of a rare and peculiar pigmentation of the lower extremities, occurred in a female, aged 45. The pigmentary deposit as seen in a series of four cases (to be reported hereafter) appeared in small circumscribed patches of irregularly rounded form, of an orange-brown colour, with or without a very slight wrinkling or scaliness of surface. In one case the marginal extension was seen to be preceded by papillary hyperæmia, but this stage was not observed in other instances. There was no associated varicosity of the limb or any other visible abnormality. Subjective symptoms were absent or limited to a slight degree of itching. In none of the examples seen was there any reason to suspect a syphilitic taint, inherited or otherwise.

6. *Impetigo contagiosa.*—There were eighteen examples of this disease, the patients, except in one case, being children under the age of ten; in the exceptional instance the subject was a young man aged twenty-one. All were in a conspicuously neglected condition as to cleanliness. A history pointing to contagion was present in nearly all the cases. It is to be noted that in several examples of ordinary pustular eczema in relatively well-tended children, similar evidence of contagion was forthcoming, and a comparison of the two sets of cases appeared to indicate that the distinctive features of the two complaints were determined rather by differences in the habits and surroundings of the patients, than by any specific pathological peculiarity of origin.

7. *Acne atrophica.*—Amongst the cases of acne were two examples of the severe diffuse form described by Bazin as *Acné atrophique*, and by Besnier as *Acné à cicatrices déprimées ou arthritique*, one in a man aged 55, the other in a young woman aged 22. In both the eruption was confined to the trunk, and the chest, shoulders, and back were covered with closely set deep cicatrices. No gouty or rheumatic tendencies or history could be ascertained in either instance.

Statistical Table, 1888.

Disease.	Jan.		Feb.		March		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Erythematous Group:																											
Erythema bullosum	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	0	1	1
„ annulare	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	2	0	2
„ papulatum	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	0	2	2
„ marginatum	...	...	...	...	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	4	0	4
„ maculatum	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	0	2	2
„ nodosum	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Urticaria	..	1	...	...	...	...	2	...	...	...	1	2	2	1	1	3	...	3	1	4	2	1	1	...	12	15	27
Herpetic Group:																											
Herpes zoster	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	2	1	...	2	...	2	...	7	2	9
Pemphigus	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	1	...	2	2	4
Eczematous Group:																											
Eczema	8	8	7	4	4	5	6	5	9	20	9	10	14	15	9	14	4	19	7	7	7	17	10	13	94	137	231
Cheiropompholyx	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	0	1	1
Impetigo	...	...	1	...	...	...	...	...	...	...	...	1	5	...	1	2	...	...	2	3	3	4	...	...	12	10	22
„ contagiosa	...	...	1	...	...	...	...	...	...	2	1	2	1	1	1	2	1	2	...	1	...	1	2	...	7	11	18
Ecthyma	...	...	...	...	...	1	...	1	...	...	1	...	...	1	...	...	1	...	...	...	...	...	...	...	2	3	5
Lichenous Group:																											
Lichen planus	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2
Prurigo (of Hebra)	...	...	...	...	...	...	...	...	...	...	...	..	...	...	1	...	...	...	1	1	...	...	...	1	2	2	4
Lichen scrofulosus	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	0	1
Psoriasis Group:																											
Psoriasis	3	1	2	2	2	3	2	3	3	7	4	5	2	5	5	3	4	3	2	2	...	5	2	1	32	40	73
Acne Group:																											
Acne vulgaris	...	...	1	...	1	4	...	3	...	2	2	2	3	1	1	...	4	2	...	5	2	...	2	2	19	16	35
Sycosis	1	...	...	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	4	0	4

| | | |

I have to thank my assistants in the Skin Department, Mr. H. D. Bulstrode and Mr. T. W. Lambert, for the preparation of the preceding statistical table.

TABLE II.—*Ages in certain groups.*

	-5.	5-10.	10-15.	-20.	-25.	-30.	-35.	-40.	-45.	-50.	-55.	-60.	-65.	-70.	-75.	-80.	Totals.
Eczema .	49	26	36	14	16	12	8	16	9	10	12	14	4	5	1	0	227
Psoriasis	5	6	7	10	9	14	6	4	5	3	0	2	1	3	0	0	72
Acne .	1	0	3	15	6	3	1	1	2	0	1	0	0	0	0	0	36
Alopecia	3	4	3	5	1	2	0	0	1	1	0	1	2	0	0	0	21
Urticaria	2	2	6	3	6	1	1	0	1	0	1	1	0	1	0	0	25

REPORT OF

THE MIDWIFERY DEPARTMENT

FOR 1888.

By ROBERT CORY, M.A., M.D.Cantab., F.R.C.P.

The Resident Accoucheurs for the year were Messrs. H. J. Smyth, J. D. Ballance, S. W. Wheaton, C. H. James, and H. B. Luard.

From the 1st of January, 1888, to the 31st of December, 1888 (both dates inclusive), 1986 women were attended. Of these, 1964 resulted in single births, and 22 in twin births. There were 11 cases of abortion among the single births.

In the following table the presentations of the children are classified:

	Among the single births.	Among the twin births.	Total.
Vertex	1914	36	1950
Breech	18	4	22
Superior extremities, including the shoulder	4	0	4
Head and hand	2	1	3
Inferior extremities	10	3	13
Face	2	0	2
Abortions	11	0	11
Prolapsed cord	3	0	3
	1964	44	2008

Of the 1986 cases attended,

312	were	1st confinements.	70	were	10th confinements.
283	„	2nd „	33	„	11th „
264	„	3rd „	16	„	12th „
238	„	4th „	9	„	13th „
202	„	5th „	3	„	14th „
160	„	6th „	3	„	15th „
188	„	7th „	1	was	18th confinement.
123	„	8th „			
81	„	9th „	1986		

The following table shows the number of women confined at each successive year of life; the youngest mother was 17, and the oldest 49 years of age:

At the age of	No. of women confined.	At the age of	No. of women confined.
17 ...	4	34 ...	72
18 ...	25	35 ...	75
19 ...	49	36 ...	75
20 ...	84	37 ...	57
21 ...	80	38 ...	57
22 ...	113	39 ...	31
23 ...	109	40 ...	37
24 ...	102	41 ...	18
25 ...	117	42 ...	13
26 ...	111	43 ...	18
27 ...	113	44 ...	5
28 ...	110	45 ...	4
29 ...	99	46 ...	4
30 ...	133	47 ...	1
31 ...	87	48 ...	1
32 ...	102	49 ...	2
33 ...	78		1986

The FORCEPS were used in 52 cases. The reasons given for their use may be tabulated as follows:

Delay during 1st stage of labour . . .	20	2 contracted pelves. 2 occipito-posterior. 1 facial presentation. 1 acute mania. 14 inertia.
Delay during 2nd stage of labour . .	32	23 tedious primipara. 1 after-coming head. 8 not stated.

There were 23 cases of primiparæ among the 52 forceps

cases, and 5 cases of rupture of the perineum are reported, all of which happened among the primiparas.

Placenta prævia.

Only two cases of placenta prævia are reported as having occurred during the year.

No.	Age of mother.	Confinement.	Sex of child.	Treatment.	Result to mother.	Result to child.	Placental position.
8768	38	9th	M.	Dilatation with Barnes' bags; separation of placenta; turning child	Recovered	Stillborn	Complete
217	30	4th	M.	Not stated	„	Living	—

The breech presented in 18 cases among the single births, which gives a proportion of 1 in every 110. In 8 of these cases the children were stillborn, which is equivalent to a death-rate of 44·4 per cent.

There were 6 cases of craniotomy during the year. The following table gives the particulars:

No.	Age.	Confinement.	Reason for operation.	Result to mother.
2166	19	1st	Rachitic pelvis	Recovered
2914	30	4th	„	„
3169	27	4th	„	„
3585	35	4th	Impacted breech	„
8619	35	6th	Rachitic pelvis	„
8932	29	2nd	„	„

Only 2 maternal deaths are recorded during the year.

No.	Age.	Confinement.	Sex of child.	Result to child.	Interval between death of mother and birth of child.	Causes.
2423	27	4th	M.	Living	5 days	Enteritis, caused by long pressure on an old hernia.
3258	30	3rd	F.	Stillborn	3 days	Uræmia.

This gives a death-rate of ·18 per cent.

Of the Children.—The number of children born among the 1986 women attended during the year was 2008, there being 22 cases of twin births. The sex of 1934 cases among them were—males 1023, females 911. The sex of 74 is not stated.

There were 70 stillbirths, or 1 in 27·3 labours, *i. e.* 3·5 per cent.

The characters of the labours in which the stillbirths occurred are given below :

Natural labours, including cases of intra-uterine maceration	20
Abortions	11
Premature	6
Breech	8
Craniotomy	6
Twins	6
Funis	1
Forceps	5
Footlings	3
Placenta prævia	1
Uræmia in mother	1
Transverse presentation	2
	70

The following table gives particulars of the cases of multiple births :

No.	Age of mother.	No. of confinement.	Date of birth.	Sex.		Result to mother.	Result to children.		Presentations.		Condition of placenta.
				1st.	2nd.		1st.	2nd.	1st.	2nd.	
2789	33	5	Jan. 28	M.	M.	R.	L.	L.	Cranial	Cranial	Not stated
2867	37	7	March 23	F.	F.	R.	L.	L.	,,	,,	,,
2879	39	15	Feb. 4	M.	F.	R.	L.	L.	,,	,,	,,
2471	31	6	Feb. 15	M.	M.	R.	L.	L.	,,	,,	,,
2943	33	6	Feb. 28	F.	M.	R.	L.	S.	,,	,,	,,
3000	26	2	May 6	M.	M.	R.	L.	L.	,,	Feet	,,
3059	29	7	March 6	F.	F.	R.	L.	L.	,,	Breech	,,
3096	38	10	April 26	M.	M.	R.	L.	L.	,,	Feet	,,
3175	35	8	May 8	F.	F.	R.	L.	L.	Breech	Cranial	,,
3200	27	5	April 3	F.	F.	R.	L.	L.	Cranial	,,	,,
3271	38	9	March 26	M.	M.	R.	L.	L.	,,	,,	,,
3292	29	3	April 29	M.	F.	R.	L.	L.	,,	,,	,,
3324	30	8	June 13	M.	M.	R.	L.	L.	,,	,,	,,
3339	36	13	May 17	M.	M.	R.	L.	L.	,,	,,	,,
2669	37	12	July 2	F.	F.	R.	L.	S.	,,	,,	,,
3343	?	10	April 9	M.	F.	R.	S.	S.	,,	,,	,,
3700	23	3	Sept. 13	F.	M.	R.	L.	S.	,,	Breech	,,
3941	27	4	?	M.	F.	R.	L.	S.	,,	Hand and head	,,
8816	32	2	?	F.	F.	R.	L.	L.	,,	Foot	,,
9079	23	3	Aug. 17	M.	M.	R.	L.	L.	,,	Cranial	Single
318	33	8	Nov. 6	M.	M.	R.	L.	L.	,,	,,	Not stated
744	37	7	Dec. 18	M.	F.	R.	L.	L.	,,	Breech	,,

MEDICAL REPORT.

1888.

By HECTOR W. G. MACKENZIE, M.D., M.R.C.P,
MEDICAL REGISTRAR.

Table I.—*General Statement of Medical and Surgical Patients.*

	Males.	Females.	Total.
Number of patients in Hospital, Jan. 1st, 1888	197	169	366
" " " Dec. 31st, 1888	189	164	353

" " discharged or died during 1888:

	Males.	Females.	Total.	Rate per cent.
Cured	1656	1161	2817	61·3
Relieved	464	502	966	21·1
Unrelieved or other causes	164	118	282	6·1
Died	314	214	528	12·5
	2598	1995	4593	

Average number of days of each medical patient's stay in hospital—28·42.
" " surgical " 33·7.

Table II.—*General Medical Statement.*

Number of Medical Beds [1] ... 171

	Males.	Females.	Total.
Number of patients in Medical Wards, Jan. 1st, 1888	71	77	148
" " admitted during the year 1888	941	852	1793
Total	1012	929	1941
" " in Medical Wards, Dec. 31st, 1888	70	77	147
" " treated to a termination during 1888	942	852	1794

" " discharged or died during 1888:

	Males.	Females.	Total.	Rate per cent.
Cured	440	430	870	48·5
Relieved	235	242	477	26·6
Unrelieved or other causes	61	41	102	5·7
Died	206	139	345	19·2
Total	942	852	1794	

Average number of days of each patient's stay in hospital—28·42.

[1] This does not include 21 beds in ward for diseases of women.

Table III.—*General*

Disease.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
I. General Diseases.																				
Rötheln	6	4	2	2	1	2	1	...	...	...	...	2	3	...	1	...	...	...	...	...
Measles	9	6	3	8	1	...	...	...	...	...	...	...	...	5	4	...	...	...	...	...
Varicella	1	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Scarlet fever	39	21	18	16	4	5	9	5	...	...	...	4	2	2	18	13	...	...	...	...
Enteric fever	95	53	42	3	18	37	21	8	6	2	...	3	3	12	55	21	1	...	...	...
Febricula	17	10	7	6	1	6	3	1	...	...	...	6	4	7	...	...	...	...	...	...
Erysipelas	16	9	7	1	...	7	1	5	2	...	...	2	9	3	2	...	...	...	...	...
Fever	1	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
Pyæmia	3	...	3	...	..	...	...	3	...	...	...	1	1	...	1	...	...	...	...	...
Diphtheria	107	33	74	59	30	10	6	2	...	...	...	49	25	20	10	3	...	...	...	...
Post-diphtheritic paralysis	3	2	1	1	1	1	...	...	...	...	...	1	...	1	1	...	...	...	...	...
Pertussis	11	5	6	9	1	...	1	...	...	...	..	4	6	...	1	...	...	...	...	...
Syphilis	4	1	3	...	...	1	2	...	...	..	1	...	...	4	...	...	...	...	...	...
Intermittent fever	3	2	1	...	...	...	...	2	1	...	...	2	1	...	...	...	...	...	...	...
Hydrophobia	1	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
Acute rheumatism	90	46	44	...	7	37	30	7	6	1	2	4	31	35	17	3	...	...	...	...
Subacute rheumatism	10	6	4	...	...	2	3	2	...	1	2	...	7	3	...	...	...	..	...	..
Chronic articular rheumatism	7	4	3	...	...	...	...	2	3	1	1	...	...	3	3	...	...	1	...	...
Rheumatic pains	6	1	5	...	...	2	2	...	...	...	...	1	3	...	...	2	...	...	...	...
Gonorrhœal rheumatism	3	3	...	...	...	...	1	1	1	...	...	...	...	2	...	1	...	...	...	...
Gout	6	6	...	...	...	...	...	1	3	2	...	...	1	3	1	...	1	...	...	...
Rickets	2	2	...	2	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	..
Myxœdema	2	1	1	...	...	...	...	...	1	...	1	...	...	1	1	...	...	...	...	...
Diabetes insipidus	2	2	...	...	...	1	1	...	...	...	...	...	...	...	1	1	...	...	...	...
Diabetes mellitus	9	4	5	...	...	1	2	3	1	1	1	1	2	...	5	1	...	...	...	...
Purpura	5	4	1	...	1	1	1	...	2	...	...	2	3	...	...	...	...	...	...	...
Pernicious anæmia	3	1	2	...	...	1	...	...	1	1	...	1	...	...	...	2	...	...	...	...
Anæmia	15	1	14	1	...	9	4	1	...	...	...	2	2	5	5	1	...	...	...	...
Lymphadenoma	4	3	1	...	...	1	1	1	...	1	...	1	...	1	...	2	...	...	...	...
Leucocythæmia	5	4	1	...		1	1	2	...	1	...	...	...	1	2	2	...	...	...	...
General tuberculosis	8	2	6	1	1	2	3	1	...	...	...	2	2	...	3	1	...	...	...	...
Disseminated malignant disease	2	2	...	...	1	...	...	...	1	...	...	1	...	...	...	1	...	...	...	...

Table of Diseases.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
4	1	...	...	...	1	...	...	None originated in hospital; 2 were students.
6	3	...	...	...	...	...	...	8 originated in hospital. 6 other cases which occurred in intercurrent diseases not included.
1	...	...	...	...	...	...	...	
14	17	...	...	1	1	6	...	31 of these arose in hospital; 2 were nurses, 1 a wardmaid, 1 a house physician, 3 students, 1 resident assistant physician. 10 cases occurring in diphtheria are not included.
51	38	...	...	...	...	2	4	5 arose in the hospital; 4 nurses, three of whom were nursing patients with enteric fever, the other was nurse in diphtheria ward adjacent to enteric ward; 1 of the nurses died. Of the fatal cases, perforation in 3.
10	7	...	...	...	...	...	...	
7	7	...	...	...	...	2	...	Cirrhosis of liver in 1 fatal case.
...	...	...	...	...	...	1	...	Fever of doubtful nature. P.M. negative.
...	...	...	...	...	...	...	3	1 after parturition; ulceration of intestine in another.
12	33	...	1	...	...	21	40	10 cases contracted scarlet fever, of which 6 died; tracheotomy in 44, 35 being fatal.
1	1	...	...	...	...	1	...	Tracheotomy in fatal case.
1	2	2	1	1	2	1	1	Rickets in 1 fatal case.
...	3	1	...	...	...	...	...	
2	...	...	...	...	1	...	...	
...	...	...	...	...	...	1	...	No history of bite. See Special Analyses, p. 343.
43	44	3	...	...	...	...	...	3 readmissions.
5	3	1	1	...	...	...	...	
...	...	3	3	...	...	1	...	In fatal case, suppuration of joints, rheumatic nodules, and adherent pericardium. See Special Analyses, p. 340.
...	4	1	1	...	...	...	...	1 after parturition.
...	...	2	...	1	...	...	...	1 transferred to surgical ward.
2	...	4	...	...	...	...	...	
...	...	...	...	...	...	2	...	
...	...	...	1	...	...	1	...	In fatal case, cerebral hæmorrhage, gout, and contracted kidney. See Special Analyses, p. 342.
...	...	2	...	...	...	...	...	
...	...	3	4	...	...	1	1	Phthisis in 1 fatal case; gangrene of foot and albuminuria in the other.
1	...	...	1	1	...	2	...	Cardiac disease in 1 fatal case, see p. 345; nephritis in the other.
...	...	...	1	...	...	1	1	See Special Analyses, p. 343.
...	8	...	6	...	...	1	...	Fatal case an infant.
...	...	1	...	1	1	1	...	No P.M. in fatal case.
...	...	2	1	...	...	2	...	
...	...	...	...	...	...	2	6	Tubercle of palate, tonsils, and pharynx in 1 fatal case. See Special Analyses, p. 341.
...	...	...	...	...	...	2	...	

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
II. DISEASES OF THE SKIN.																				
Eczema	2	...	2	...	...	...	...	1	1	...	...	...	...	...	1	1	...	...	...	...
Lichen planus	1	...	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Ichthyosis	1	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Psoriasis	2	1	1	...	...	1	...	...	1	...	...	...	...	1	...	1	...	...	...	...
Pemphigus	2	...	2	1	1	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...
Molluscum fibrosum	1	1	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...
Lupus erythematosus	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Chilblains	1	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Ecthyma	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	..	...	...	...	...
III. DISEASES OF THE RESPIRATORY ORGANS.																				
Acute laryngitis	5	1	4	...	...	2	...	2	...	1	...	1	1	3	...	...	...	...	...	...
Syphilitic disease of larynx	2	...	2	...	...	...	...	2	...	...	...	...	...	...	2	...	...	...	...	...
Tubercular disease of larynx	3	...	3	...	...	1	1	1	.	...	...	...	...	3	...	...	...	...	...	...
Bilateral paralysis of abductors	1	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Paralysis of right vocal cord	2	...	2	...	...	...	...	1	...	...	1	...	1	1	...	...	...	...	...	...
Malignant disease of larynx	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Tracheitis	2	1	1	...	...	...	...	1	1	...	...	1	...	...	1	...	...	...	...	...
Bronchitis	64	34	30	9	3	4	7	10	12	10	9	7	14	21	17	3	1	1	...	...
Bronchiectasis	1	1	...	...	...	1	...	...	...	...	..	...	...	...	1	...	...	...	...	...
Broncho-pneumonia	20	12	8	12	5	1	1	1	...	...	...	3	7	8	1	1	...	...	...	...
Acute pneumonia	97	75	22	10	18	19	23	14	9	3	1	21	19	36	17	4	...	...	...	...
Phthisis	46	29	17	1	1	1	13	14	9	5	2	12	5	15	10	3	1	...	...	...
Hæmoptysis	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Pneumothorax	1	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Pyo-pneumothorax	1	1	...	...	...	...	...	1	...	..	...	1	...	...	...	...	...	...	...	...
Pleurisy	47	31	16	4	5	10	12	11	2	2	1	7	5	19	13	3	...	...	...	...
Empyema	18	16	2	5	1	3	8	1	...	...	...	1	2	1	9	5	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	1	...	1	...	...	...	...	
...	...	...	...	...	1	...	...	
...	...	...	...	1	...	...	...	
...	...	1	1	...	...	...	...	
...	2	...	...	...	...	...	...	
...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	
...	...	1	...	...	...	...	...	
...	1	...	...	...	...	...	...	
1	3	...	1	...	...	...	...	
...	...	...	2	...	...	...	...	
...	...	...	3	...	...	...	...	In 2 no signs of disease in lungs.
...	...	1	...	...	...	...	...	
...	...	...	1	...	1	...	...	
...	...	1	...	...	...	...	...	
...	...	1	...	...	...	...	1	Syphilitic in fatal case.
15	8	13	18	...	...	6	4	No P.M. in 2 fatal cases, emphysema in 3, broncho-pneumonia also in 3.
...	...	...	...	1	...	...	...	
6	7	2	...	...	...	4	1	
59	20	...	...	...	...	16	2	60 on the right side, 32 on the left, 5 double; 20 were apical, of which 2 were fatal.
...	...	13	5	3	1	13	11	No P.M. in 6 of the fatal cases. Of the others, in 14 both lungs were affected, in 4 only one lung; in 4 the larynx was also affected, in 6 the intestines were ulcerated. In 2 there was also empyema, in 1 cirrhosis of liver, and in 1 carcinoma of pylorus; 1 was fatal from pneumothorax, another from acute peritonitis.
1	...	...	...	...	...	...	...	
1	...	...	...	...	...	...	...	
...	...	...	...	...	...	1	...	Due to perforation of œsophageal ulcer.
25	14	5	2	...	...	1	...	14 on the right side, 28 on the left, 5 double; 22 were tapped, 4 tubercular.
12	...	3	...	1	...	...	2	Rickets and pericarditis in 1 fatal case, acute nephritis in the other; 4 on the right side, 11 on the left, 3 readmissions; 9 treated by excision of rib, 3 by incision; the former all recovered, 1 of the latter died.

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
III. DISEASES OF THE RESPIRATORY ORGANS — *continued.*																				
Hydatid of lung	2	2	...	...	...	...	...	2	...	...	...	...	...	1	1	...	...	..	...	...
Intrathoracic tumour	13	7	6	...	...	3	2	2	6	...	...	...	3	4	6	...	...	...	...	...
Œdema of lungs	1	1	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Asthma	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	..	...	...	...	...
Cough	2	2	...	1	...	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...
Dyspnœa	1	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
IV. DISEASES OF THE ORGANS OF CIRCULATION.																				
Pericarditis	6	2	4	...	...	2	3	...	1	...	...	1	...	1	4	...	...	...	...	...
Adherent pericardium	2	1	1	...	...	1	...	1	...	...	...	...	...	...	...	1	...	1	...	...
1. *Valvular disease.*																				
Mitral	71	16	55	...	2	21	16	20	5	4	3	2	9	26	23	8	2	1	...	...
Aortic	19	16	3	...	...	...	1	5	5	6	2	3	1	5	8	2	...	...	...	...
Mitral and aortic	17	11	6	...	...	3	6	4	1	3	...	2	2	3	6	2	1	1	...	...
2. *Vessels.*																				
Thoracic aneurysm	16	16	...	...	...	...	...	6	5	2	3	1	1	3	6	4	1	...	...	...
Abdominal aneurysm	2	2	...	...	...	...	...	...	1	...	1	...	1	...	...	...	1	...	...	...
Phlebitis	2	...	2	...	...	...	1	1	...	...	...	...	...	...	2	...	...	...	...	...
V. DISEASES OF THE DUCTLESS GLANDS.																				
Exophthalmic goitre	4	...	4	...	...	1	...	2	1	...	...	1	...	1	1	1	...	...	...	...
Malignant disease of suprarenal	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Enlarged thyroid	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...
VI. DISEASES OF THE DIGESTIVE ORGANS.																				
1. *Alimentary canal.*																				
Stomatitis	2	2	...	2	...	...	...	...	...	...	...	...	1	1	..	...	...	...	...	...
Tonsillitis	46	16	30	2	...	16	24	2	2	...	...	25	16	5	...	...	...	...	...	...
Parotitis	1	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...

continued.

Cured.		Re-lieved.		Unre-lieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
1	...	1	...	...	...	...	...	1 readmission.
...	...	4	4	1	1	2	1	4 readmissions. No P.M. in 1 fatal case.
...	...	...	...	...	...	1	...	
...	...	...	1	...	...	...	...	
2	...	...	...	...	...	...	...	
...	...	...	...	...	...	1	...	Bronchial gland ulcerating into and obstructing trachea.
2	2	...	...	...	...	...	2	Fibroid disease of heart in 1.
...	...	...	...	...	...	1	1	Endocarditis in 1.
...	...	11	44	2	1	3	10	4 readmissions. No P.M. in 5 of the fatal cases; stenosis in 4.
...	...	7	3	...	...	9	...	2 readmissions. No P.M. in 1 fatal case.
...	...	7	2	...	...	4	4	Mitral stenosis in 4 of the fatal cases.
...	...	8	...	3	...	5	...	No P.M. in 1.
...	...	2	...	...	...	...	...	
...	1	...	...	...	...	...	1	Pulmonary embolism in fatal case.
...	...	...	3	...	...	...	1	Only partial P.M. in fatal case. Enlarged tubercular glands in thorax.
...	...	...	...	...	...	1	...	See Special Analyses, p. 345.
...	...	1	...	...	...	...	...	
2	...	...	...	...	...	...	...	
14	30	1	...	...	...	1	...	Tracheotomy performed in fatal case, which was one of doubtful septicæmia. Among the cases there were 6 nurses, 5 students, 2 house surgeons, 1 house physician.
1	...	...	...	...	...	...	...	

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
VI. DISEASES OF THE DIGESTIVE ORGANS—*continued.*																				
Pharyngitis	2	2	...	...	...	...	1	...	1	...	...	1	...	1	...	...	...	...	...	...
Stricture of œsophagus	9	8	1	...	...	...	...	...	1	3	5	1	3	3	1	1	...	...	...	...
Dyspepsia	36	7	29	...	...	3	9	9	7	8	...	5	19	7	4	1	...	...	...	...
Gastric ulcer	29	8	21	...	...	3	16	6	4	...	...	4	2	5	14	2	1	1	...	...
Duodenal ulcer	1	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
Vomiting	8	4	4	1	...	2	3	...	...	2	...	3	3	1	1	...	...	...	...	...
Malignant disease of stomach	11	5	6	...	...	...	...	1	6	3	1	...	2	5	2	2	...	...	...	...
Gastro-intestinal catarrh	6	4	2	6	...	...	...	...	...	...	...	6	...	...	...	...	...	...	...	...
Diarrhœa	19	14	5	13	...	1	1	1	1	...	2	5	8	3	3	...	...	...	...	...
Enteritis	3	2	1	...	...	...	1	2	...	...	...	1	...	...	2	...	...	...	...	...
Dysentery	2	2	...	...	...	...	...	1	1	...	...	...	1	1	...	...	...	...	...	...
Colic	11	10	1	...	...	2	3	1	4	1	...	3	3	3	2	...	...	...	...	...
Constipation	37	16	21	3	3	15	6	2	5	...	3	14	15	7	1	...	...	...	...	..
Intestinal obstruction	6	4	2	1	...	1	...	1	...	1	2	4	1	...	...	1	...	...	...	...
Intussusception	4	2	2	2	...	1	...	...	...	1	...	4	...	...	...	...	...	...	...	...
Malignant disease of intestines	8	4	4	...	...	...	1	2	2	3	...	3	2	1	1	1	...	...	...	...
Perityphlitis	17	13	4	...	...	8	4	3	1	1	...	1	3	7	4	1	1	...	...	...
Tubercular ulceration of intestine	2	1	1	...	...	2	...	...	...	...	...	1	...	...	1	...	...	...	...	...
Perforation of vermiform appendix	3	2	1	...	1	...	2	...	...	...	...	3	...	...	...	...	...	...	...	...
2. *Peritoneum.*																				
Acute peritonitis	5	2	3	...	1	1	3	...	...	...	...	1	1	1	2	...	...	...	...	...
Pelvic peritonitis	2	...	2	...	...	1	1	...	...	...	...	...	...	...	1	...	1	...	...	...
Chronic peritonitis	3	2	1	...	...	...	2	...	...	...	1	...	...	...	...	1	1	...	1	...
Tubercular peritonitis	9	6	3	4	...	3	2	...	...	...	...	1	...	2	3	2	1	...	...	...
Malignant disease	9	1	8	...	...	...	...	2	6	...	1	1	5	1	2	...	...	...	...	...
3. *Liver.*																				
Cirrhosis	22	10	12	...	...	...	...	7	13	1	1	3	5	3	7	3	1	...	...	...
Congestion	1	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Abscess	2	2	...	...	...	...	1	1	...	...	...	...	...	1	1	...	...	...	...	...
Enlargement	4	...	4	...	...	...	...	1	2	1	...	...	...	2	1	1	...	...	...	...
Hydatid	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
Syphilitic disease	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Malignant disease	4	2	2	...	...	...	...	...	1	1	2	...	...	2	2	...	...	...	...	...
Biliary colic	4	...	4	...	...	...	3	...	...	1	...	...	2	2	...	...	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
2	...	...	...	...	...	...	...	1 student.
...	...	5	...	2	...	1	1	1 the result of swallowing ammonia, the others probably all malignant.
4	20	3	9	...	...	...	...	
1	5	5	16	...	...	2	...	1 fatal from perforation, the other from hyperpyrexia; 1 readmission.
...	...	...	...	...	...	1	...	Fatal from perforation.
4	2	...	2	...	...	...	...	
...	...	2	2	1	1	2	3	1 readmission. In 3 of the fatal cases, disease limited to pylorus.
...	...	...	...	...	...	4	2	Rickets in 3 cases.
8	5	3	...	...	...	3	...	No P.M. in fatal cases; all infants.
...	1	1	...	...	...	1	...	Hæmorrhagic erosion of stomach in fatal case.
2	...	...	...	...	...	...	...	
9	1	1	...	...	...	...	...	
14	21	2	...	...	...	...	...	
...	...	...	...	...	...	4	2	No P.M. in 2. Strangulation by band in 2.
...	1	...	...	...	...	2	1	The case of recovery, a female aged 50, doubtful.
...	...	...	...	1	1	3	3	In 5 the rectum was the seat of disease.
11	4	1	...	...	...	1	...	No P.M. in fatal case. 1 readmission.
...	...	...	1	...	...	1	...	
...	...	...	...	...	...	2	1	Cirrhosis of liver in 1.
1	2	...	...	1	...	...	1	
...	2	...	...	...	...	...	...	
...	...	2	...	...	...	...	1	1 readmission.
4	1	1	2	...	...	1	...	
...	...	...	6	...	...	1	2	1 female admitted five times for paracentesis.
...	...	4	11	1	...	5	1	3 females admitted three times each. No P.M. in 2 fatal cases. Hæmorrhage from dilated œsophageal veins in 1.
1	...	...	...	...	...	...	...	
...	...	1	...	...	...	1	...	
...	...	...	4	...	...	...	...	
...	...	...	...	...	...	1	...	Treated by drainage. Phthisis found at P.M.
1	...	...	...	...	...	...	...	
...	...	...	1	...	1	2	...	
...	3	...	1	...	...	...	...	No jaundice in 2.

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
VI. DISEASES OF THE DIGESTIVE ORGANS—*continued.*																				
Obstructive jaundice	11	6	5	...	...	...	3	4	2	2	...	2	...	3	5	...	1	...	...	...
4. *Various.*																				
Abdominal tumour	8	4	4	...	...	2	1	3	...	...	2	...	1	2	3	2	...	...	...	...
Tapeworms	1	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
VII. DISEASES OF THE GENITO-URINARY SYSTEM.																				
Acute nephritis	20	14	6	3	7	4	2	1	3	...	..	3	1	3	11	2	...	...	...	...
Chronic nephritis	31	23	8	...	...	7	2	8	8	3	3	4	3	8	8	7	1	...	...	...
Suppurative nephritis	1	1	...	...	...	...	...	...	1	. .	...	...	1	...	...	...	...	...	...	...
Nephralgia	1	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
Renal calculus	4	2	2	...	...	1	...	3	...	...	...	1	1	1	...	...	1	...	...	...
Perinephritic abscess	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Pyelitis	1	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Hydronephrosis	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Paroxysmal hæmaturia	1	1	...	...	1	...	...	...	..	...	...	...	1	...	...	...	...	...	...	...
Bilharzia hæmatobia	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Movable kidney	1	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Impervious ureters	1	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
VIII. DISEASES OF THE NERVOUS SYSTEM.																				
Acute meningitis	6	4	2	2	1	2	...	1	...	...	...	2	1	1	2	...	...	...	...	...
Tubercular meningitis	8	5	3	5	1	1	...	...	...	1	...	7	1	...	...	...	...	...	...	...
Chronic meningitis	2	2	...	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
Retraction of head	3	3	...	3	...	...	...	...	...	.	...	...	1	1	...	1	...	...	...	...
Hemiplegia	22	10	12	...	...	1	4	4	4	3	6	1	3	6	9	3	...	...	...	...
Aphasia	3	3	...	...	...	...	...	2	...	...	1	...	...	3	...	...	...	...	...	...
Cerebral hæmorrhage	4	4	...	...	...	...	...	1	1	1	1	4	...	...	...	...	...	...	...	...
„ softening	1	1	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
„ syphilis	2	...	2	...	...	...	...	2	...	...	...	...	...	...	2	...	...	...	...	...
„ tumour	13	5	8	1	...	5	3	3	...	1	...	...	2	4	3	3	1	...	...	...
Chronic hydrocephalus	2	1	1	2	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...
Headache	6	1	5	...	1	3	...	2	...	...	...	2	1	3	...	...	...	...	...	...
Hemicrania	1	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Obscure cerebral diseases	2	1	1	...	...	...	1	1	...	...	..	1	...	...	1	...	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
4	...	1	3	...	...	1	2	4 catarrhal, 3 probably gall-stones, 1 doubtful origin. Of the fatal cases, no P.M. in 1, obstruction by gall-stone in 2, xanthelasma in 1.
...	...	4	3	...	...	...	1	No P.M. in fatal case; probably malignant.
...	...	1	...	...	...	...	...	
6	5	5	1	...	...	3	...	8 probably scarlatinal. Cirrhosis of liver also in 1 fatal case.
...	...	12	4	1	...	10	4	No P.M. in 2. Contracted granular kidneys in 5, large white kidneys in 7 of the fatal cases.
...	...	...	...	...	...	1	...	
...	...	1	...	...	...	...	...	
...	...	1	1	...	1	1	...	
1	...	...	...	...	...	...	...	
...	...	1	...	...	...	...	...	
...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	
...	...	1	...	...	...	...	...	Patient from Lake Nyassa.
...	...	...	1	...	...	..	...	
...	...	...	...	...	...	1	...	Malformation of heart also; lived 3 days after birth.
...	...	...	...	1	1	3	1	Of the fatal cases, 2 secondary to ear disease.
...	...	...	...	...	...	5	3	No P.M. in 2.
...	...	1	..	...	...	1	...	
2	...	1	...	...	...	...	...	
3	1	6	9	1	2	...	...	14 on the right side, in 8 of which there was aphasia; 8 on the left. Cardiac disease in 3, syphilitic history in 4, injury in 1.
1	...	1	...	1	...	...	...	
...	...	...	...	...	..	4	...	In all, contracted granular kidneys.
...	...	...	...	...	...	1	...	Probably due to thrombosis.
...	2	...	...	...	...	...	...	
...	...	2	5	1	1	2	2	See Special Analyses, p. 348.
...	...	...	...	...	1	1	...	No P.M. in fatal case.
1	4	...	1	...	...	...	...	Optic neuritis in 1.
...	...	...	1	...	...	...	...	
...	...	...	...	1	1	...	...	

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
VIII. DISEASES OF THE NERVOUS SYSTEM — *continued.*																				
Paralysis agitans	2	1	1	...	...	...	...	1	1	...	...	...	1	...	1	...	...	...	...	...
Ophthalmoplegia	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Tetanus	2	1	1	1	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...
Tetany	3	3	...	3	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...
General paralysis of insane	13	13	...	...	...	...	3	4	6	...	...	3	4	4	2	...	...	...	...	...
Other mental disorders	9	6	3	...	...	3	2	2	...	1	1	3	4	2	...	...	...	...	...	...
Chorea	35	8	27	...	8	27	...	..	...	...	...	2	...	6	24	3	...	...	...	...
Hysteria	38	3	35	...	...	12	15	10	1	...	...	9	6	7	7	8	...	1	...	...
Epilepsy	16	11	5	...	...	4	5	4	1	2	...	8	4	4	...	...	...	...	...	...
Menière's disease	1	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Infantile convulsions	8	6	2	8	...	...	...	...	...	...	...	6	2	...	...	...	...	...	...	...
Cervical pachymeningitis	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...
Paraplegia	19	15	4	...	...	1	3	9	5	1	...	2	2	4	7	4	...	...	...	...
Contracture of legs	2	...	2	...	...	2	...	...	...	...	...	...	1	...	...	...	...	1	...	...
Infantile paralysis	4	3	1	4	...	...	...	...	...	...	...	...	...	...	2	2	...	...	...	...
Infantile spasmodic paraplegia	1	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Chronic anterior polio-myelitis	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Myelitis	2	2	...	...	...	...	...	1	1	...	...	...	...	...	1	1	...	...	...	...
Locomotor ataxy	4	3	1	...	...	...	...	...	1	2	1	...	2	...	1	1	...	...	...	...
Disseminated sclerosis	4	2	2	...	...	...	1	3	...	...	...	...	1	1	1	...	1	...	...	...
Pseudo-hypertrophic paralysis	2	2	...	...	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...
Progressive muscular atrophy	1	...	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Obscure spinal	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Muscular hypertonicity	1	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Spasmodic torticollis	2	2	...	...	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...	...
Multiple peripheral neuritis	3	1	2	...	...	...	1	1	...	1	...	...	1	...	...	2	...	...	...	...
Paresis of extremities	5	5	...	2	...	...	1	1	...	...	1	2	...	2	1	..	...	...	...	...
Lumbago	1	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
Sciatica	3	3	...	...	...	...	1	1	1	...	...	1	...	1	...	1	...	...	...	...
Intercostal neuralgia	3	2	1	...	...	...	3	...	...	...	...	...	1	1	...	...	...	...	...	...
IX. POISONING.																				
Alcoholism	29	10	19	...	...	1	6	12	8	2	...	14	2	8	1	2	1	...	...	1
Plumbism	15	14	1	...	...	2	3	7	2	1	...	8	2	4	...	1	...	...	...	...

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M	F.	M.	F.	M.	F.	M.	F.	
...	...	...	1	1	...	...	...	
...	...	...	1	...	...	...	...	
...	...	...	...	...	...	1	1	
1	...	2	...	...	...	...	...	1 readmission.
...	...	4	...	9	...	...	...	
...	...	1	1	5	2	...	...	
5	19	3	7	...	1	...	...	3 readmissions. History of rheumatism in 9, cardiac disease in 17.
2	26	1	7	...	2	...	...	2 readmissions; 7 treated by massage and overfeeding, all cured.
...	...	11	5	...	...	...	...	
...	...	1	...	...	...	...	...	
4	1	...	1	...	...	2	...	P.M. negative in 1; rickets in other fatal case.
...	...	1	...	...	...	...	...	
...	1	7	2	7	1	1	...	In fatal case, malignant disease of vertebræ.
...	...	...	2	...	...	...	...	1 readmission.
...	...	2	1	1	...	...	...	
...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	
...	...	...	...	...	...	2	...	
...	...	2	...	1	1	...	...	
...	...	2	2	...	...	...	...	
...	...	...	...	2	...	...	...	Brothers.
...	...	...	1	...	...	...	...	
...	...	1	...	...	...	...	...	
...	...	1	...	...	...	...	...	
1	...	...	...	1	...	...	...	
...	1	1	..	...	1	...	...	Alcoholic cases included under Alcoholism.
1	...	4	...	...	...	...	...	
...	...	1	...	...	...	...	...	
3	...	...	...	...	...	...	...	
...	...	2	...	...	1	...	...	1 readmission.
5	10	2	5	1	2	2	2	5 were cases of delirium tremens, 1 of which was fatal; paralysis in 8, of which 2 were fatal. Cirrhosis of liver and tuberculosis in 1 of the fatal cases with paralysis.
14	1	...	...	...	...	...	...	Colic in 12, palsy in 4. 6 were painters, 1 glazier, 3 employed in lead works, 1 silver refiner, 1 gasfitter, 1 colour mixer.

TABLE III—

DISEASE.	Number of cases.			Age.								Duration of residence.								
	Total.	M.	F.	Under 5	5–10	–20	–30	–40	–50	–60	Above 60	Under 1 week	Wks. 1–2	Wks. 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Above 1 year
IX. POISONING—*continued.*																				
Opium	2	..	2	...	...	...	...	2	...	...	...	1	1	...	...	...	...	...	...	...
Belladonna	1	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
Chlorodyne	1	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Carbolic acid	1	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Oxalic acid	2	2	...	...	...	...	...	2	...	...	...	2	...	...	...	...	...	...	...	...
Chloroform	1	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...
Ammonia	1	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...
Turpentine	2	2	...	2	...	...	...	...	...	..	...	2	...	...	...	...	...	...	...	...
Benzoline	1	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...
Bichromate of potassium	1	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
White precipitate	1	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	..	...	...
Hydrochloric acid	3	1	2	1	...	...	...	2	...	...	...	1	1	...	1	...	...	...	...	...
Sulphuric acid	1	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Ice cream	1	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...
X. SURGICAL AND MISCELLANEOUS.																				
Debility	7	2	5	...	...	1	4	...	1	...	1	1	2	4	...	...	...	...	...	..
Marasmus	3	1	2	3	...	...	...	...	...	...	...	1	1	1	...	...	...	...	...	...
Immersion	4	2	2	...	...	...	3	...	1	...	...	4	...	...	...	...	...	...	...	...
Abscess	1	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Disease of ear	9	7	2	4	...	3	2	...	...	...	...	3	3	1	2	...	...	...	...	...
Periostitis	2	1	1	...	...	...	...	1	...	...	1	...	...	2	...	...	...	...	...	...
Epistaxis	4	3	1	1	...	1	1	...	1	...	...	2	1	...	1	...	...	...	...	...
Spinal caries	3	3	...	...	...	...	1	2	...	...	...	...	...	...	3	...	...	..	...	...
Malingering	1	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...
Various	6	2	4	...	...	1	2	1	1	1	...	3	...	2	1	...	...	...	...	...
Unclassified	25	7	18	9	1	3	3	4	3	2	...	17	4	3	1	...	...	...	...	...
XI. DISEASES OF THE FEMALE GENERATIVE ORGANS.																				
Uterus	3	...	3	...	..	1	1	...	1	...	...	1	...	...	2	...	...	...	...	...
Ovarian tumour	6	...	6	...	1	...	2	...	...	2	1	3	1	...	2	...	...	...	...	...
Total	1794	942	852																	

continued.

Cured.		Relieved.		Unrelieved.		Died.		REMARKS.
M.	F.	M.	F.	M.	F.	M.	F.	
...	1	...	1	...	...	...	...	1 morphine habit.
...	1	...	...		...	...	...	
...	1	...	...	...	...	...	...	
1	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
1	...	...	...	...	...	...	...	
2	...	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
1	...	...	...	...	...	...	...	
...	1	...	...	...	...	...	...	
1	2	...	...	...	...	...	...	
...	...	...	...	...	...	...	1	
...	1	...	...	...	...	...	...	
2	5	...	...	...	...	...	...	
...	...	1	1	...	...	...	1	Pulmonary collapse in fatal case.
2	1	...	...	...	...	...	1	
...	1	...	...	...	...	...	...	
...	2	2	...	1	...	4	...	No affection of brain, beyond affection of membranes, in fatal cases. Suppuration or thrombosis of cerebral sinuses in 2, pyæmia in 1, arachnitis in 1. See also under Meningitis.
1	...	...	1	...	...	...	...	Both syphilitic.
3	1	...	...	...	...	...	...	
...	...	2	...	...	...	1	...	Pulmonary phthisis and amyloid disease in fatal case.
1	...	...	...	...	...	...	...	
1	1	1	2	...	1	...	...	
4	8	1	3	1	6	1	1	No P.M. in 1. P.M. negative in the other fatal case.
...	2	...	...	...	1	...	...	
...	...	...	1	...	1	...	4	Of the fatal cases 3 were malignant.
440	430	235	242	61	41	206	139	
870		477		102		345		
1794								

Table IV.—*Table of Mortality.*

DISEASE.	Total.		Age.									Mortality per cent.
	No. discharged.	No. died.	Under 5	5–10	–20	–30	–40	–50	–60	–70	Above 70	
1. General Diseases.												
Scarlet fever	33	6	5	1	...	...	...	...	...	...	...	15·6
Enteric fever	89	6	...	1	1	3	...	1	...	...	...	6·3
Erysipelas	14	2	1	...	...	1	...	...	...	...	...	12·5
Diphtheria	46	61	43	17	1	...	...	...	...	...	...	57
Post-diphtheritic paralysis	2	1	1	...	...	...	...	...	...	...	...	...
Pyæmia	...	3	...	...	...	...	3	...	...	...	...	...
Pertussis	9	2	2	...	...	...	...	...	...	...	...	18·2
Hydrophobia	...	1	...	...	...	...	1	...	...	...	...	...
Rickets	...	2	2	...	...	...	...	...	...	...	...	...
Chronic articular rheumatism	6	1	...	...	...	...	...	1	...	...	...	14·3
Diabetes mellitus	7	2	...	...	...	...	1	...	...	1	...	...
Purpura	3	2	...	1	...	1	...	...	...	...	...	...
Anæmia	14	1	1	...	...	...	...	...	...	...	...	...
Pernicious anæmia	1	2	...	...	1	...	...	...	1	...	...	...
Leucocythæmia	3	2	...	...	1	...	1	...	...	...	...	...
Lymphadenoma	3	1	...	...	...	...	...	...	1	...	...	...
General tuberculosis	...	8	1	1	2	3	1	...	...	...	...	...
Myxœdema	1	1	...	...	...	...	...	...	...	1	...	...
Malignant disease	...	2	...	1	...	...	...	1	...	...	...	...
2. Diseases of the Respiratory Organs.												
Syphilitic tracheitis	...	1	...	...	...	...	...	1	...	...	...	...
Bronchitis	54	10	4	...	...	...	1	3	1	...	1	15·6
Broncho-pneumonia	15	5	5	...	...	...	...	...	...	...	...	25
Acute pneumonia	79	18	3	...	...	3	6	3	2	1	...	18·55
Phthisis	22	24	...	1	...	6	8	3	5	1	...	52·2
Pleurisy	46	1	1	...	...	...	...	...	...	...	...	2·1
Pyo-pneumothorax	...	1	...	...	...	...	1	...	...	...	...	...
Empyema	16	2	1	...	...	1	...	...	...	...	...	11·1
Intrathoracic tumour	10	3	...	...	1	...	1	1	...	...	...	23
Œdema of lungs	...	1	...	...	...	...	...	...	...	...	1	...
Ulceration of trachea by caseous bronchial gland	...	1	1	...	...	...	...	...	...	...	...	...
3. Diseases of the Organs of Circulation.												
Adherent pericardium	...	2	...	...	1	...	1	...	...	...	...	...
Pericarditis	4	2	...	...	...	1	...	1	...	...	...	...
Mitral	58	13	...	...	3	2	4	2	1	1	...	18·3

Table IV—*continued.*

Disease.	Total.		Age.									Mortality per cent.
	No. discharged.	No. died.	Under 5	5–10	–20	–30	–40	–50	–60	–70	Above 70	
3. Diseases of the Organs of Circulation—*continued.*												
Aortic	10	9	...	...	...	...	4	3	2	...	...	52·6
Mitral and aortic	9	8	...	...	1	3	3	...	1	...	...	47
Thoracic aneurysm	11	5	...	...	...	...	...	3	...	1	1	31·2
Phlebitis	1	1	...	...	...	...	1	...	...	...	...	...
4. Diseases of Ductless Glands.												
Exophthalmic goitre	3	1	...	...	...	...	1	...	...	...	...	...
Malignant disease of supra-renal	...	1	...	...	1	...	...	...	...	...	...	...
5. Diseases of the Digestive Organs.												
Tonsillitis	45	1	...	...	...	1	...	...	...	...	...	2·2
Stricture of œsophagus	7	2	...	...	...	...	...	...	2	...	...	22·2
Gastric ulcer	27	2	...	...	...	1	...	1	...	...	...	16·9
Malignant disease of stomach	6	5	...	...	...	...	1	2	2	...	...	45·5
Gastro-intestinal catarrh	...	6	6	...	...	...	...	...	...	...	...	...
Diarrhœa	16	3	3	...	...	...	...	...	...	...	...	15·8
Enteritis	2	1	...	...	...	1	...	...	...	...	...	...
Intestinal obstruction	...	6	1	...	1	...	1	...	1	2	...	...
Intussusception	1	3	2	...	1	...	...	...	...	...	...	...
Malignant disease of intestines	2	6	...	...	...	1	2	2	1	...	...	...
Perityphlitis	16	1	...	...	...	...	1	...	...	...	...	...
Perforation of vermiform appendix	...	3	...	1	...	2	...	...	...	...	...	...
Acute peritonitis	4	1	...	...	...	1	...	...	...	...	...	...
Chronic peritonitis	2	1	...	...	...	...	...	...	...	1	...	...
Malignant disease of peritoneum	6	3	...	...	...	...	1	1	...	1	...	...
Cirrhosis of liver	16	6	...	...	...	...	1	4	...	1	...	27·3
Abscess of liver	3	1	...	...	...	1	...	...	...	...	...	...
Obstructive jaundice	8	3	...	...	...	2	...	...	1	...	...	27·3
Abdominal tumour	7	1	...	...	...	...	...	...	...	...	1	12·5
Hydatid of liver	...	1	...	...	...	1	...	...	...	...	...	...
Malignant disease of liver	2	2	...	...	...	...	...	1	1	...	...	...
6. Diseases of the Genito-urinary System.												
Acute nephritis	17	3	1	1	...	...	...	1	...	...	...	15
Chronic nephritis	17	14	...	...	4	2	3	1	2	2	...	45·2
Suppurative nephritis	...	1	...	...	...	...	...	1	...	...	...	...
Renal calculus	3	1	...	...	...	...	1	...	...	...	...	...
Impervious ureters	...	1	1	...	...	...	...	...	...	...	...	...

Table IV—*continued.*

DISEASE.	Total.		Age.								Mortality per cent.
	No. discharged.	No. died.	Under 5	5–10	–20	–30	–40	–50	–60	–70	Above 70	
7. Diseases of the Nervous System.												
Acute meningitis	2	4	2	...	2	...	...	...	...	...	...	...
Tubercular meningitis	...	8	5	1	1	...	...	...	1	...	...	...
Chronic meningitis	3	1	1	...	...	...	...	...	...	...	...	...
Cerebral hæmorrhage	...	4	...	...	...	...	1	1	1	1	...	...
„ softening	...	1	...	...	...	...	...	...	...	1	...	...
„ tumour	9	4	1	...	1	...	1	...	1	...	...	30·8
Chronic hydrocephalus	1	1	1	...	...	...	...	...	...	...	...	...
Tetanus	...	2	1	1	...	...	...	...	...	...	...	...
Paraplegia	18	1	...	...	...	...	1	...	...	...	...	5·2
Myelitis	...	2	...	...	...	...	1	1	...	...	...	...
Infantile convulsions	6	2	2	...	...	...	...	...	...	...	...	...
8. Poisoning.												
Alcoholism	25	4	...	...	...	1	2	1	...	...	...	14
Sulphuric acid	...	1	1	...	...	...	...	...	...	...	...	...
9. Surgical and Miscellaneous.												
Marasmus	2	1	1	...	...	...	...	...	...	...	...	...
Immersion	3	1	...	...	...	...	...	1	...	...	...	...
Disease of ear	5	4	2	...	1	1	...	...	...	...	...	...
Spinal caries	2	1	...	...	...	1	...	...	...	...	...	...
Doubtful	...	2	1	...	...	...	...	1	...	...	...	...
10. Diseases of the Female Generative Organs.												
Ovarian tumour	2	4	...	...	...	1	...	...	2	1	...	...

TABLE V.—*Cases of Infectious Diseases originating in Hospital.*

Initials.	Sex.	Age.	Disease for which admitted.	Disease originating in hospital.	Date of attack.	Result.	Remarks.
W. C.	M.	25	Tubercular disease of knee	Scarlatina	Nov. 12, 1887	D. Jan. 22, 1888	From Albert Ward.
R. A.	F.	5	Diphtheria	,,	,, 29, 1887	C. ,, 22, 1888	From Luke Ward.
G. D.	F.	3	Nævus of lip	,,	Dec. 2, 1887	C. ,, 17, 1888	From Victoria Ward.
B. L.	M.	2	Tetany	,,	,, 5, 1887	C. Feb. 27, 1888	Ditto.
R. V.	M.	3	Necrosis of ankle	,,	,, 9, 1887	C. ,, 16, 1888	Ditto.
H. C.	M.	4	Ascites	,,	,, 12, 1887	C. Mar. 1, 1888	Ditto.
H. H.	F.	—	—	,,	,, 12, 1887	C. Feb. 1, 1888	Probationer on duty, No. 8 Block.
P. B.	M.	2	Burn	,,	,, 16, 1887	D. Jan. 9, 1888	From Victoria Ward.
S. B.	F.	6	Disease of hip	,,	,, 17, 1887	C. Mar. 4, 1888	Ditto.
A. T.	F.	21	—	,,	Jan. 4, 1888	C. ,, 1, 1888	Ward Maid.
S. W.	F.	12	Chorea	,,	,, 18, 1888	C. ,, 18, 1888	From Charity Ward.
G. C.	F.	4	Burn	,,	,, 19, 1888	C. April 5, 1888	From Victoria Ward.
E. H.	M.	27	—	,,	Feb. 13, 1888	C. ,, 7, 1888	House Physician.
A. C.	M.	$1\frac{3}{12}$	Renal calculus	,,	,, 15, 1888	C. Mar. 31, 1888	From Victoria Ward.
A. L.	F.	$1\frac{8}{12}$	Diphtheria	,,	,, 22, 1888	C. April 17, 1888	From Luke Ward.
E. F.	M.	21	—	,,	,, 29, 1888	C. ,, 16, 1888	Dresser.
M. B.	F.	15	Disease of hip	,,	Mar. 2, 1888	C. ,, 23, 1888	From Alexandra Ward.
F. A.	F.	3	Burn	,,	,, 4, 1888	C. May 6, 1888	From Victoria Ward.
E. W.	M.	23	—	,,	,, 10, 1888	C. April 27, 1888	Dresser.
V. C.	F.	$2\frac{1}{2}$	Burn	,,	,, 13, 1888	C. May 17, 1888	From Victoria Ward.
H. F.	M.	3	—	,,	,, 18, 1888	C. ,, 24, 1888	Ditto.
M. S.	F.	6	Tubercular disease of hip,&c.	,,	,, 30, 1888	C. June 13, 1888	Ditto.
H. T.	M.	8	Abscess of thigh	,,	April 6, 1888	C. ,, 13, 1888	From Albert Ward.
H. M.	M.	31	—	,,	,, 15, 1888	C. ,, 8, 1888	Resident Assistant Physician.
C. C.	F.	39	Alcoholic paralysis	,,	,, 23, 1888	C. ,, 29, 1888	From Christian Ward.
L. D.	F.	21	(?) Typhoid	,,	May 12, 1888	C. ,, 28, 1888	Ditto.
E. J. N.	M.	16	Disease of ankle	,,	,, 13, 1888	C. July 1, 1888	From Albert Ward.
E. R.	F.	27	—	,,	,, 15, 1888	C. June 20, 1888	Nurse in Christian Ward.
L. B.	F.	2	Burn	,,	,, 29, 1888	C. July 8, 1888	From Victoria Ward.
J. S.	M.	4	Empyema	,,	June 5, 1888	D. June 11, 1888	From Lydia Ward.
H. O.	M.	23	—	,,	July 2, 1888	C. Aug. 10, 1888	Student.

TABLE V—*continued.*

Initials.	Sex.	Age.	Disease for which admitted.	Disease originating in hospital.	Date of attack.	Result.	Remarks.
R. L.	F.	6	Diphtheria	,,	Oct. 12, 1888	C. Nov. 26, 1888	From Luke Ward.
M. O.	F.	3	,,	,,	,, 14, 1888	C. ,, 7, 1888	Ditto.
E. N.	F.	4	Burn	,,	,, 18, 1888	C. Dec. 30, 1888	From Victoria Ward.
F. G.	F.	2	Diphtheria	,,	,, 19, 1888	D. Oct. 23, 1888	From Luke Ward.
E. W.	F.	3	,,	,,	,, 27, 1888	D. ,, 31, 1888	Ditto.
J. P.	M.	4	Burn	,,	,, 26, 1888	D. Nov. 8, 1888	From Victoria Ward.
F. C.	F.	6	Diphtheria	,,	Nov. 29, 1888	D. ,, 30, 1888	From Luke Ward.
W. R.	M.	3	,,	,,	,, 30, 1888	D. Dec. 4, 1888	Ditto.
C. P.	F.	5	,,	,,	Dec. 3, 1888	D. ,, 17, 1888	Ditto.
J. P.	F.	1	,,	,,	,, 24, 1888	D. ,, 27, 1888	Ditto.
R. H.	M.	21	Pleurisy	Measles	Nov. 25, 1887	C. ,, 19, 1887	From Arthur Ward.
W. R.	M.	$3\frac{1}{2}$	Empyema	,,	May 17, 1888	C. Aug. 1, 1888	From Victoria Ward.
C. W.	M.	$1\frac{1}{2}$	Abscess	,,	,, 30, 1888	C. June 30, 1888	Ditto.
C. C.	M.	$\frac{7}{12}$	Bronchitis	,,	June 3, 1888	D. ,, 29, 1888	Ditto.
A. G.	F.	6	Necrosis of tibia	,,	,, 11, 1888	C. July 7, 1888	Ditto.
J. C.	M.	4	Disease of hip	,,	,, 12, 1888	C. ,, 12, 1888	Ditto.
J. C.	M.	$\frac{10}{12}$	Eczema	,,	,, 14, 1888	C. ,, 12, 1888	Ditto.
J. F.	M.	3	Disease of ankle	,,	,, 16, 1888	C. ,, 12, 1888	Ditto.
L. P.	F.	3	Papillomata of larynx	,,	July 1, 1888	C. ,, 30, 1888	From Elizabeth Ward.
C. B.	M.	3	Fractured femur	,,	,, 15, 1888	C. Aug. 18, 1888	Ditto.
A. H.	F.	5	Disease of spine	,,	,. 15, 1888	C. ,, 7, 1888	From Victoria Ward.
F. H.	M.	2	Disease of ankle	,,	,, 15, 1888	C. ,, 17, 1888	Ditto.
F. G.	M.	$1\frac{7}{12}$	Infantile paralysis	,,	Nov. 18, 1888	C. Dec. 9, 1888	From Charity Ward.
J. P.	F.	7	Enteric fever	,,	,, 21, 1888	C. ,, 6, 1888	Ditto.
M. S.	F.	33	—	Enteric fever	Dec. 29, 1887	C. Feb. 22, 1888	Nurse in Luke Ward.
L. L.	F.	19	Dyspepsia	,,	Jan. 15, 1888	C. Mar. 27, 1888	In Christian Ward.
N. K.	F.	25	—	,,	Sept. 11, 1888	C. Nov. 5, 1888	Nurse in Arthur Ward.
N. R.	F.	32	—	,,	,, 28, 1888	C. ,, 29, 1888	Nurse in Luke Ward.
J. C.	F.	—	—	,,	Dec. 7, 1888	D. Dec. 7, 1888	Nurse in Charity Ward.

SPECIAL ANALYSES AND ABSTRACTS.

I.—ENTERIC FEVER.

Selected cases.

1. *Chronic gastritis ending in enteric fever, contracted in the hospital.*—Female, æt. 19, who had been suffering from dyspepsia for six months, admitted December 15th, 1887. For first fortnight, occasional vomiting with constipation. Second fortnight better, allowed to be up and about the ward. Temperature uniformly normal until January 14th, 1888, when in the evening it was 100·2°; this marked the commencement of an attack of enteric fever. On the 15th, the morning and evening temperatures were 100·8° and 100·4°; on the 16th, 100·8° and 103·2°; on 17th, 100·8° and 103°; and for four weeks there was a febrile temperature. Headache and bad taste in the mouth were the first symptoms complained of. Spots first noticed on the 24th, when there was a pretty copious eruption, continued to come out until the 30th. Constipation all through illness. No complications. No relapse. Good recovery.

The source of infection was probably an enema syringe which, having previously been used for a case of enteric fever, was employed to give the patient an enema.

2. *Parotid bubo.*—Male, æt. 18th, admitted February 4th. Ill one week; headache, vomiting, and malaise at onset, diarrhœa for three days before admission.

On admission, wandering in mind, copious eruption, enlarged spleen, dry brown tongue, distended and tympanitic abdomen. Temperature ranged from 105° to 102·8°. Bowels loose.

On February 8th a swelling of the left parotid was noticed, giving rise to pain and uneasiness. This increased for a few days and then began to subside.

On the 15th it was noticed that there was a discharge from the left ear, which continued for two days.

On the 19th the swelling was incised and pus let out, and the temperature, which had been febrile since admission, became normal next day and remained down. There was constipation after the 11th. The patient made a good recovery.

3. *Morbus cordis.*—Male, æt. 50, admitted November 30th. Ill fourteen days. Headache, diarrhœa, anorexia, and malaise during first week. Seen by a doctor

on the 28th, who, discovering that he had heart disease, attributed his illness to this and prescribed for him accordingly. Hæmorrhage from the bowels occurred on the 28th and 29th.

On admission, temperature 103·6°, pulse 102; abdomen distended, tongue dry, brown, and cracked, numerous spots, spleen not felt. Signs of mitral disease.

Temperature febrile for five weeks, and after normal temperature for four weeks a relapse occurred with febrile temperature for eleven days. The bowels were constipated throughout after the diarrhœa at the onset. The patient made a satisfactory recovery.

II.—CHRONIC ARTICULAR RHEUMATISM.

Fatal case.

Suppuration of joints; rheumatic nodules; adherent pericardium.—Male, æt. 45, carpenter, admitted May 18th, 1888.

History.—Four attacks of rheumatic fever, the first lasting three months at age of twenty-three, the second four years later, the third the following year, and the fourth two years before admission. For eight months had been confined to bed, suffering from pains in the knees, shoulders, and knuckles.

Condition on admission.—Anæmic and feeble. Both knees flexed and unable to be extended; joints enlarged by irregular growths along the margins of condyles; crepitus on passive movement. Tibiæ displaced backwards. Muscles of legs wasted. Much pain and stiffness of shoulder-joints with wasting of shoulder-muscles. Symmetrical enlargement of metacarpo-phalangeal joints. Wasting of thenar and hypothenar eminences and of interossei. Fingers displaced towards ulnar side. Numerous subcutaneous nodules on forehead and on the backs of the knuckles. No signs of visceral disease.

Progress.—During the seven months the patient lived in the hospital, the nodules became larger and more numerous. Numerous large nodules appeared beneath the scalp principally over the occipital bone, on the forehead especially at upper margin of orbit, over the sacro-iliac joints and the lower part of sacrum and coccyx, on the penis and scrotum, in the situation of the mammæ, over the lower costal cartilages and in the epigastrium superficial to the rectus muscle, also on each side of the tendo Achillis.

Effusion took place in the knee-joints, which remained flexed.

Suppurating sores developed on the outer sides of knee-joints and on knuckles in connection with the nodules.

Towards the end of November he was attacked with inflammation of wrist-joints which became red, swollen, and tender. His temperature, previously normal, became slightly febrile. The effusion in the knees increased, and he died on December 3rd.

Post-mortem examination.—Body thin. The *nodules* on forehead round, firm, yellowish-white, apparently fibrous, attached to pericranium; nodules elsewhere not cut into. No urate of soda in right great toe-joint. Much thick pus in both knee-joints, the crucial ligaments of which were swollen and congested while the articular cartilages of the femur, tibia, and patella had lost their polish and showed patches of erosion here and there, and the margins of the bones

were studded with small bony outgrowths. The right wrist-joint was full of pus and the articular surfaces were affected similarly to those of the knee-joints.

Pericardium adherent, but not very firmly, over the front of right ventricle, while firmly united to the parietal layer over front and back of upper part of the right ventricle were several small yellowish-white, firm nodules.

Heart.—Thickening of endocardium, and a small round nodule on auricular aspect of mitral valve were the only changes.

Nodules were also found in the cortex of the left kidney and in the spleen.

III.—GENERAL TUBERCULOSIS.

Selected fatal case.

Tubercle of palate, tonsils, and pharynx.—Female, æt. 20, admitted May 7th, 1888.

Her *history* was, that until a week or two previously she was well; her throat then became swollen and painful and she was unable to swallow solids. She had also vomiting, profuse perspirations, and frontal headache. No benefit received from treatment by local practitioner.

On admission, well-nourished, slightly-made girl. Fauces congested; left tonsil enlarged and deeply ulcerated at its upper part, while surrounding the ulcer and over the central part of the soft palate were small sago grain-like bodies. Larynx healthy. The cervical and supra-clavicular glands and the glands beneath the jaw were much enlarged. Thoracic and abdominal organs normal.

Progress.—At first there was slight improvement as regards the throat, the pain diminishing, but no marked change took place. The temperature for the first week rose to over 100° at night, for the second and third to over 102°, being normal or nearly so during the day. After the third week, until the patient's death on July 3rd, the temperature in the evening was generally as high as 104°, while the morning temperature was three or four degrees lower. Rigors occurred on the 15th, 16th, and 19th of June and on the 1st of July. The patient had a good deal of pain and tenderness in the upper part of the abdomen, and suffered from cough. No bacilli were found in the sputum. No definite physical signs developed in lungs. She emaciated rapidly, losing in weight about half a pound a day. A measly eruption appeared on June 25th, probably antipyrin rash, fifteen grains of which were ordered to be taken every four hours on the 12th.

Post-mortem examination.—Body extremely emaciated. Large softish swellings on both sides of neck, formed by lymphatic glands enlarged and disintegrated by softening cheesy tubercle. Both deep and superficial glands were affected and the disease extended beneath the jaw. From some of the glands thick yellow pus exuded. The soft palate, uvula, tonsils, pharynx, and ary-epiglottic folds were all badly affected. The soft palate, right tonsil, and pharynx were white, sodden, honeycombed, and dotted with minute grey tubercles; no deep ulceration, only superficial loss of substance. There was a large, deep, well-defined ulcer on the left tonsil. Swelling and inflammation had extended to the ary-epiglottic folds but not below them. The disease of the lymphatic glands appeared to be older than that of the fauces. The lungs were both throughout the seat of

miliary tuberculosis, the small grey tubercles being so numerous as to produce a general semi-solidification. There was scarcely any caseation. The kidneys contained an unusual number of round grey and yellow tubercles, situated both in cortex and medulla. Miliary tubercles probably also present in spleen and liver.

IV.—MYXŒDEMA.

Fatal case.

Gout; contracted kidney; death from cerebral hæmorrhage.—Male, æt. 64, employed at gas-works, admitted on November 14th, 1888, having previously been treated for three weeks in the out-patient department.

History.—Some six years ago he was run over by a cab and met with injuries to ribs and right shoulder for which he was treated at Westminster Hospital as in-patient for a month. Previous to this accident he had been perfectly well. He came to this hospital on account of weakness in the legs which had been increasing on him for four years. He had occasionally suffered from giddiness, numbness, and coldness of the feet, and epistaxis.

Condition on admission.—Eyelids swollen, lips thick, alæ nasi wide apart and thickened, cheeks full and flushed. Skin harsh and dry all over body. Hair coarse and scanty. Hands and fingers thick. Clumsy in manipulation. Speech slow, deliberate, and monotonous. Memory impaired. Perception slow. Snoring when asleep. Abdominal and thoracic organs normal. Urine no albumen. Knee-jerks normal.

Progress.—During the three weeks which elapsed between the patient's admission and his death the patient's only complaint was of numbness and coldness of feet. His bowels were constipated. His temperature always subnormal. No albumen detected in urine.

On December 4th he was seized with sickness, and on trying to get back to bed he fell. He was found to be unconscious. Coma deepened. Limbs became rigid. Pupils contracted and insensitive. He died some twelve hours after the attack.

Post-mortem examination.—Face pale and puffy, suggestive but not characteristic of disease. Scarcely noticeable œdema under eyelids; no œdema of legs or elsewhere. Fat throughout body plentiful, healthy in colour. Blood abundant and rich in colour. Hands not characteristic.

Tongue large but normal. Tonsils small. Pharynx, soft palate, and uvula affected with solid œdema, most marked in the posterior pillar of fauces.

Epiglottis large, both in length and breadth, but both it and the larynx were normal.

Thyroid gland very small, very pale in colour, and firm. Section uniformly pale and broken up into little islands by fibrous tissue.

Heart large, especially the left ventricle, otherwise healthy.

Lungs emphysematous.

Liver, *spleen*, and *suprarenals* healthy.

Kidneys normal in size, capsule adherent, surface finely granular, cortex pale and greatly reduced in thickness.

Very slight deposit of urates in both great toe-joints.

Cervical sympathetic healthy.

Brain.—Thin layer of blood effused over surface of both hemispheres. Very large hæmorrhage between the nucleus caudatus and lenticularis on left, destroying the centrum ovale and basal ganglion. Ventricles filled with blood.

V.—HYDROPHOBIA.

Male, æt. 32, admitted August 19th, 1888, and died the same day. No history of bite or scratch by cat or dog. No history of previous illness.

Patient after a few days' poorliness took worse on August 15th, when he became unable to sleep or to swallow, experienced difficulty in breathing, and was restless and excited.

Condition on admission.—He staggered in with the body bent forward and the head bowed. When seated he remained with the head bowed, swayed his body from side to side, occasionally burying his head in his hands, and bending sideways on to the form. He repeated loudly that he was very nervous and wanted morphia. He expectorated continually small quantities of frothy mucus. He then threw himself on to the floor and crawled to a couch, where he lay spitting incessantly. He was removed to a small ward and placed in bed. On being offered something to drink in a teaspoon he put his head forward as if to take it, but before it reached his lips dashed it away, and drew back shuddering and gasping, with a look of horror. Eyes wide open and staring.

One third of a grain of morphia hypodermically had no influence over him.

Chloroform quieted him, but after he had been kept under its influence for two hours he suddenly became worse. Cheyne-Stokes' respiration ensued and he died some three hours after admission.

Post-mortem examination.—Lungs emphysematous. In left upper lobe at posterior border an old, nearly empty cavity, about an inch in diameter. Similar cavity in right upper lobe. Numerous small grey tubercles scattered through both lungs. Much congestion and some recent hæmorrhage in the dependent parts.

No naked-eye changes in brain or spinal cord.

VI.—PERNICIOUS ANÆMIA.

Fatal case.

Female, æt. 52, admitted September 29th, 1888.

History.—Eighteen months previously she became pale, lost flesh, and felt weak. Her appetite failed, and she suffered from dyspepsia and palpitation. She then improved under treatment as an out-patient. About the middle of August, 1888, she began to get ill again. The former symptoms returned and in a worse degree.

Condition on admission.—Anæmic and emaciated. Lemon-yellow colour of skin. Conjunctivæ icteric tinge. Legs œdematous. No visceral disease dis-

covered. Urine no albumen. Examination of the blood showed that the individual corpuscles were of a good colour and normal size and shape, and formed rouleaux well.

Progress.—Three months elapsed before the patient died. During that time the temperature was never elevated and the urine never contained albumen. No retinal or other hæmorrhages. The patient lost a good deal of weight, 8 lbs. in a month. She suffered much from diarrhœa during the last month of her illness. She gradually sank and died on December 28th.

Post-mortem examination.—Body much emaciated. Skin everywhere very pale and yellowish. No œdema.

Lungs œdematous and bloodless.

Heart anæmic. Slight incompetency of mitral valve due to thickening of posterior flap.

Liver anæmic, pale and flabby.

Kidneys.—Slightly adherent capsule, cortex diminished, substance pale and anæmic. Beyond the fact that the mucous membrane of the colon and rectum was pulpy and pale, no disease of intestines. Stomach normal.

Brain anæmic but firm.

VII.—LEUCOCYTHÆMIA.

Fatal case.

Male, æt. 36, sailor, admitted November 16th, 1887, and died March 14th, 1888.

His father was said to have died of consumption. He himself had had no illness, neither ague, dysentery, nor syphilis. He had lived in the West Indies for three years but was well all the time. Towards the end of 1886, he noticed a swelling in the splenic region, painless and not tender, and this gradually increased in size. He had occasional attacks of *epistaxis* from the left nostril. No other hæmorrhages. No other symptoms except loss of flesh.

Condition on admission.—Thin; lips good colour. An enlarged, hard *spleen* filled whole of left side of abdomen. The right border extended a little beyond the umbilicus, just above which was a well-marked notch. No tenderness to palpation.

The *liver* was not felt below the ribs, and the dulness commenced in the usual situation. This is interesting, as the liver was found to be much enlarged after death. The girth at the umbilicus was 31¼ inches, round the most prominent part of the swelling 34¾ inches.

Lungs.—Dulness, diminished breath-sounds and crepitations at left base.

Heart normal.

Urine normal.

Blood pale in colour. The white corpuscles were very numerous, being apparently about half as numerous as the red. The red were not nearly as numerous as in health but formed good rouleaux and were of fairly good colour.

Eyes.—Retinal vessels very tortuous. No hæmorrhages. In yellow-spot region small white spots in both. Some small patches of exudation near the disc.

Glands slightly enlarged in groins but elsewhere normal.

Progress.—At first the patient was treated with quinine but he did not feel nearly so well when he was taking it and complained of its physiological effects, giddiness, deafness, &c. No improvement took place in the general condition. Frequent attacks of epistaxis. On January 24th he was ordered Liq. Arsenicalis ♏xij ter die together with Quin. Sulph. gr. xij om. nocte. Some improvement took place in the general condition and the number of white corpuscles diminished until on February 28th signs of broncho-pneumonia developed; cough, blood-stained sputum, râles both lungs. The temperature became febrile and remained so to the end, and the patient gradually sank.

Post-mortem examination.—Body thin. A little serous fluid in abdomen. The left side of the great omentum adherent to spleen in several places.

The *spleen* weighed nearly 6 lbs. It measured 11 inches in length by 7 inches in breadth. The capsule was much but irregularly thickened and whitened. Here and there the thickening passed for half an inch or more into the interior, but there was no osseous mass in any of the fibrous ingrowths, which were apparently thickened trabeculæ. On section the organ was of a dull red colour, homogeneous, and extremely firm and consistent, like the liver in advanced cirrhosis. No amyloid reaction.

The *liver* weighed 7 lbs. 4 oz. On section there were numerous large pale areas, probably of fatty change, and also very many minute white bodies, possibly of lymphoid tissue.

The *lungs.*—There was much muco-pus in the bronchi. The left lower lobe was solid from broncho-pneumonia, which in some places was breaking down into a purulent material. There was some lymph on the surface, and there were also a few small bodies resembling miliary tubercles, none of which were seen elsewhere in the lungs.

Heart, kidneys, thyroid, stomach, and *intestines* normal.

Glands.—Many of the mesenteric, retro-peritoneal, and bronchial were enlarged and caseous.

VIII.—PURPURA.

Fatal case.

Male, æt. 29, policeman, admitted May 16th, 1888, on account of a purpuric eruption, and painful and swollen joints, died May 27th, 1888.

His history was, that on May 11th he noticed spots appearing first on the thigh and soon after on the arms and face. He also suffered from pain and swelling in knees and elbows. He had suffered from attacks of rheumatism since childhood and had had bronchitis and asthma. His fnther had died of heart disease.

Condition on admission.—Strong-looking, powerful man with flushed face.

Skin.—Profuse perspiration. An eruption consisting of purple spots, varying in size from one to three lines in diameter, on the face, arms, backs of hands, and legs; the larger slightly raised, the smaller like sudamina. Purpuric spots also on the gums and soft palate.

Joints.—Most swelling and tenderness in the right knee, but the left knee and elbows affected.

Heart.—Action rapid and very irregular. Short sharp first sound followed by faint systolic murmur at the apex.

Lungs, liver, and *spleen* normal.

Urine.—No albumen, trace of sugar. Temp. 101·4°.

Eyes.—No retinal hæmorrhages, and fundi normal.

Progress and treatment.—He was ordered Sod. Salicyl. gr. xx 4tis horis, and to have lemons and greens with a light diet. The eruption, however, at first increased instead of subsiding. Large bumps appeared on the face and scalp. The gums became purple and sore all along, the uvula and soft palate swollen and red, and faint spots appeared on the tongue. The scalp, face, and hands became œdematous.

On May 21st it was noted the face was covered with rather diffuse spots. On the arms the old spots had increased in size to half an inch in diameter, and many had become confluent, especially at wrist and elbow, both back and front. Spots had commenced to come out on the trunk, especially the back, on the evening of the 19th. These were all small, about a line in diameter. The abdomen was almost covered with innumerable minute spots. Fresh crops of spots had appeared on the knees and ankles. The gums became of an ashy grey colour close to teeth, purple further from the edge. Two ulcers on the soft palate and an ulcer on lower lip appeared. Urine on the 21st contained a trace of albumen, no blood, doubtful trace of sugar, but on the 25th as much as one half of albumen was present with hyaline and granular casts, crystals of uric acid, and oxalate of lime. The spots continued to increase and showed a tendency to spread at the periphery and clear up at the centre. Delirium developed on the 27th and he died suddenly the same day. The temperature was never high, generally 100° or 101° at night.

Post-mortem examination.—Body fat. All over the surface livid hæmorrhages, some of which were distinctly raised; some as large as a shilling, others quite small.

Heart.—Right side dilated and hypertrophied, full of blood, liquid and clotted, and of normal appearance. Mitral orifice narrowed to three inches in circumference, with thickened fibrous edges fringed by small bead-like vegetations. Similar vegetations on aortic curtains, which were otherwise healthy.

On the *gums,* the inner surfaces of the *cheeks,* the *soft palate,* and the *right tonsil* superficial gangrenous ulcers.

The *epiglottis,* the aryteno-epiglottidean folds livid and swollen but not infiltrated with blood. The posterior surface of the epiglottis showed a large gangrenous ulcer, and the right vocal cord was also ulcerated.

The *bronchi* contained frothy, blood-stained mucus.

In both *lungs,* mainly in the lower lobes, there was extensive extravasation of black blood, and scattered through these extravasations were numerous patches of pink broncho-pneumonic consolidation.

Pericardium and *pleuræ* normal.

Liver advanced nutmeg.

Spleen and *kidneys,* chronic congestion.

Adrenals, pancreas, thyroid, brain, and *lower intestine* normal.

IX.—INTRATHORACIC TUMOUR.

Cases in which a post-mortem examination was made.

1. *Intrathoracic tumour, gangrene of left lung, pressure on recurrent laryngeal nerve.*—Male, æt. 49, admitted November 25th, 1887, died January 1st, 1888.

History.—Loss of appetite and dyspepsia commenced in June, 1887. Soon after he had shortness of breath on going to work. For ten weeks before admission suffered from cough, loss of voice, and pain down the sternum always present, but worse after taking food. Spat up blood on November 15th. Steady emaciation from commencement of illness.

Condition on admission.—Sallow, emaciated, blue about the lips. Breath very offensive. No inequality of pupils or pulses.

Lungs.—Dulness over front of left with feeble but semitubular breath-sounds, absent vocal fremitus, pectoriloquy and friction along junction of pleura and pericardium. Some *enlarged glands* in left supra-clavicular fossa.

Heart.—Sounds feeble but healthy. No perceptible impulse.

Larynx.—Complete paralysis of left vocal cord.

Progress.—He continued to suffer from pain in sternal region, especially after food. Occasionally vomiting after food.

Post-mortem examination.—A mass of new growth in position of anterior mediastinal glands, mainly on left side, adherent to the outer aspect of the pericardial sac, and to the inner surface of left upper lobe. Numerous white, slightly raised masses of growth visible on the parietal layer of pericardium internally. Nearly the whole of the left lung was solid, mainly from collapse, and the lower lobe was gangrenous. The posterior mediastinal, œsophageal and bronchial glands were also much affected. The œsophagus was not narrow except at one point about two inches above the cardiac end, where there was a nodule of growth adherent to the outer surface. The recurrent laryngeal nerve was involved in the growth at the aortic arch. The supra-clavicular glands on the left side were enlarged and infiltrated.

2. *Mediastinal tumour infiltrating pericardium.*—Male, æt. 13, admitted January 28th, and died February 8th, 1888.

History.—Ill fourteen days, suffering from cough, feeling of cold, and shortness of breath. Abdomen began to swell seven days, and legs three days before admission.

Condition on admission.—Anæmia, orthopnœa, cachectic look. Legs and feet œdematous and of purplish colour. Ascites. Lungs, dulness at left base with whispering pectoriloquy, harsh breath-sounds at left apex. Heart, no abnormal signs. Respiration 36, shallow and laboured. Pulse 126. Urine no albumen. No enlargement of liver or spleen.

Progress.—On February 1st, the presence of dilated veins over the upper part of the sternum going down to the ensiform cartilage was noted. The dulness at the base of the left lung increased, and vocal fremitus disappeared. On February 4th, 34 oz. of slightly turbid serum were removed by means of the aspirator from left pleura. This, however, was not followed by relief to the patient's dyspnœa. The respiration became more laboured, and he died on February 8th. The temperature was normal throughout.

Post-mortem examination.—Much œdema of legs, penis, and scrotum, none of upper part of body. No enlargement of glands anywhere. A hard white mass of new growth, nowhere more than an inch thick, covered the pericardial sac to which it was adherent. The adjacent part of the pleura on the right side was involved, but the lung was not. There was nearly a pint of turbid serum in pericardium, but no inflammation. The wall of the right auricle and right ventricle was thickened by growth. There were two or three pints of turbid serum in left pleura and several pints in the abdomen. Left lung a little collapsed in the lower lobe. No thrombosis in veins. Liver, spleen, and kidneys, chronic congestion.

X.—ABDOMINAL TUMOUR.

Fatal case.

Sarcoma of right suprarenal.—Male, æt. 7, admitted February 5th, died May 1st. He had complained of pain in the right side since he had scarlet fever two years previously, worse six weeks. No swelling of abdomen noticed by mother until the day before admission.

Condition on admission.—Abdomen much distended at the upper part and covered with large dilated veins. Liver dulness commenced at the fifth rib and extended below nearly to the umbilicus, and in the flanks to the iliac crest. The mass projecting below the ribs felt firm, rather hard, and slightly nodular. No tenderness. Urine normal.

Progress.—The principal symptom was pain. The tumour was twice explored with the aspirating needle, but only a little blood was obtained. The tumour steadily increased in size. On April 17th it was noted the abdomen had become very large, especially above the umbilicus, and to the right. The veins over the upper and right quarter of the abdomen were very prominent. On April 30th he passed some blood by the bowel, and was sick. He died next morning.

Post-mortem examination.—Body emaciated, abdomen extremely distended. Stomach and transverse colon displaced to left. An enormous tumour filled the whole of the right side of the abdomen. Right kidney pushed down into the lumbar and umbilical region and flattened. Right lobe of liver extremely atrophied lying on surface of tumour, to which it was adherent, but not affected with growth. The suprarenal could not be found, and the tumour occupied its place, and grew just as a suprarenal tumour would grow. The tumour was soft and diffluent. Microscopical examination showed it to be a small round-celled sarcoma. No disease of other organs.

XI.—CEREBRAL TUMOUR.

Fatal cases.

1. *Tumour of pons Varolii.*—Male, æt. 4, admitted June 5th, 1888, and died August 14th, 1888.

Condition on admission.—Well nourished but pallid. Expression dull and heavy. Slight convergent *squint*, paresis of right external rectus, and probably

also of left. *Ptosis* of right eyelid. Knee-jerks present. Eyes: fundi normal. *Pulse* 92, *irregular*, and occasionally intermitting. No affection of emunctories.

History.—Six weeks previously he had been knocked down, and subsequently it was noticed that he began to *stagger* and fall about, that he seemed *drowsy* and did not care to play, and that he began to *squint*, to lose his appetite, and to suffer occasionally from *pain* at the back of the head. He had no fits or vomiting.

Family history.—Father epileptic, and father's mother died of cerebral hæmorrhage. Mother's father hemiplegic. Two children died of infantile convulsions and another living subject to fits.

Progress.—*Vomiting*, of which there was no previous history, was very frequent during the first ten days, and occurred occasionally later. *Constipation* was more or less suffered from during the whole of the illness, the bowels only acting every fourth day after purgatives. *Choking* occurred on swallowing fluids, and there was regurgitation through the nose due to *paralysis of the soft palate*, which hung loosely and could be touched without giving rise to any irritation or reflex action. *Left facial paralysis* was noticed for the first time on June 14th, and *paralysis of the left arm* was noticed on June 22nd, and of the *left leg* on June 25th. At times he had *retention of urine*. *Expiratory spasms*, during which the intercostals contracted and the diaphragm ascended with a jerk, were noted as occurring occasionally when the patient was spoken to. They were accompanied by a kind of nasal grunt. His mental condition was one of *hebetude*. He seldom spoke even to his mother, though he seemed to know her. On July 25th it was noted that for some hours he was in a semi-comatose condition and lay without moving or opening his eyes, but he became conscious again and recognised his mother and seemed to understand what was said to him.

The *knee-jerks* were present throughout.

There was never any marked optic neuritis, but shortly before death the edges of the disc became a little indistinct, the vessels a little tortuous, with perhaps slight bending of the vessels. There was great emaciation.

The *temperature* was normal throughout except for a day or two during the last week of the illness.

Post-mortem examination.—Body emaciated. No external disease. All organs except the brain healthy. On the mucous membrane of the left side of the mouth was a round, clearly-defined superficial ulcer about the size of a shilling. The sinuses of the brain were healthy. The surface of the convolutions moderately injected, smooth, and moist. No signs of inflammation. Excess of serum. Slight opacity of membranes about the optic nerves. The brain was all healthy except the pons. The latter was rendered shapeless and swollen by an irregular, soft, pinkish new growth in which some of the nerves were involved. The trunks of the olfactory, optic, third and fourth appeared unaffected. Neither of the sixth nerves could be found at all. The fifth on the right passed through the mass and was seriously involved; on the left the fifth was free. The trunks of the other nerves appeared to be also free. As the growth occupied the greater part of the pons and reached close on to the floor of the fourth ventricle, the nuclei of those nerves whose trunks were free may have been affected.

2. *Cyst of cerebellum; hydrocephalus.*—Female, æt. 14½, admitted November 4th, 1887, and died April 8th, 1888.

History.—About a year before admission recommended by her teacher to leave school as work was too much for her. *Double vision* and *failure of sight* came on in August, 1887, and attacks of *vomiting* and *frontal headache* in September.

Condition on admission.—Healthy looking. No sign of disease of thoracic or abdominal viscera. Mentally bright and intelligent. Severe double *optic neuritis*; no perception of light in left eye. Vision = $\frac{6}{24}$ in right eye. Convergent *squint* of left eye. Special senses good. No paralysis. *Knee-jerks absent* or extremely slight.

Progress.—The patient suffered from attacks of severe headache and vomiting; in the intervals seemed fairly well. The bowels were constipated. *Atrophy of the optic discs* followed the neuritis, and the patient had become quite blind by the 12th of December. On January 21st she had a *fit*, ushered in by giddiness and faintness, and she lost consciousness for about a minute. After this date fits were not infrequent. *Nystagmus* developed, first noticed on February 19th, at which date no oculo-motor paralysis seemed present. The *knee-jerks* remained absent or very doubtfully present. The patient died in a fit.

Post-mortem examination.—Body fairly nourished. Thoracic and abdominal viscera healthy. *Brain* convex surface pale, dry, and bulged. Pia mater thickened and tending to stick during removal of brain. Ventricles distended with fluid. A smooth-walled cyst containing about two drachms of serum was found in the white matter of the right half of the cerebellum. It extended to the middle line, and contained no membrane or filamentous material. Spinal cord normal.

3. *Tumours of brain secondary to carcinoma of breast.*—Female, æt. 34, admitted September 5th, 1888, and died November 11th, 1888. In August, 1888, breast amputated for tumour of encephaloid type. For a month or two before removal of breast she had noticed some *weakness of the left arm and leg* which gradually increased. She also had severe *frontal headache.*

Condition on admission.—*Paralysis of left arm and leg*, complete in arm with exception of slight movements in the fingers, partial in leg, which could be moved but not lifted. *Paralysis of left external rectus; partial facial paralysis.*—No affection of sensation. Patellar reflexes brisk, plantar normal. Ankle and patellar clonus on left side. *Double optic neuritis.*

At base of left lung impairment of resonance with diminished vocal fremitus, vocal resonance and breath-sounds. No other signs of visceral disease.

Progress.—Patient suffered much from headache. She had loss of control over rectum, and suffered from constipation. She became very depressed, emotional, and sometimes noisy and delirious. She had *delusions* that she was poisoned, that she emitted a peculiar odour. She passed into a state of *stupor* and died comatose.

Post-mortem examination.—Anterior mediastinal glands and base of left lung and adjacent part of diaphragm and liver infiltrated with growth.

Brain.—Left sixth nerve small and soft. Right hemisphere large and bulged chiefly towards the median aspect. A very soft, dull, white growth surrounded by softening occupied the entire centrum ovale, and invaded the roof of the lateral ventricle, corpus callosum, fornix, and the outer part of the ventricular aspect of the caudate nucleus and optic thalamus, and the white matter superficially just outside these nuclei. In the upper part of the floor of the fourth

ventricle over the position of the nuclei of the sixth there was a small white elevation about the size of a pea, situated chiefly to the right of the middle line but extending slightly to the left.

4. *Tumour of corpus callosum.*—Male, æt. 58, admitted March 7th, died March 15th.

The patient was said to have been well until a fortnight before admission. He then suffered from *hebetude* and depression of spirits. On the 6th of March he went to bed suffering from *headache*, and was found next morning in a fit with convulsions of head and limbs, and other *fits* followed so that he had nine in three hours.

Condition on admission.—Suffering from *fits*. In fit, head and eyes turned to the right, clonic spasm of facial muscles, rigidity of right upper and lower extremity, with clonic spasm of arm and tremor of foot. Between the fits apparently right hemiplegia. Pupils equal, contracted, and inactive to light. He continued to have fits until 4 p.m. On the 8th he was conscious; head and eyes turned to left; pupils inactive to light, right larger than left; answered questions, but in a stammering way.

Progress.—His mental condition remained one of hebetude. He only spoke when spoken to and then indistinctly. He had difficulty in naming objects but understood what was said to him. He passed his evacuations into bed. He could use the right arm fairly well but the right leg was distinctly weak. The knee-jerks were not obtained, but the rigidity probably accounted for this. On the 14th his breathing was of the Cheyne-Stokes type and stertorous, and this continued till death, which took place on the 15th.

Post-mortem examination.—Brain.—A soft, very vascular, loose-textured, yellow and red new growth occupied the anterior third or fourth of the corpus callosum and spread with it into the hemispheres as far as the outer limit of the caudate nucleus, which was uninvolved on the right and only just grazed on the left. No other disease in brain, and with the exception of a few caseous nodules at the apices of the lungs the other organs were healthy.

XII.—PARAPLEGIA.

Fatal cases.

1. *Tumour involving tenth, eleventh, and twelfth dorsal and first lumbar vertebræ; pressure on spinal cord; cystitis; suppurative nephritis.*—Male, æt. 38, admitted October 19th, 1888, and died November 23rd, 1888.

Seven months before admission he began to have *pain* in the back and the left lower extremity, which prevented him from working and kept him awake at night. In the beginning of October he began to suffer pain also in the right lower extremity, and a few days before admission he lost power and feeling in his legs and control over the sphincters.

Condition on admission.—Complete loss of power of all the muscles of the lower extremities, with complete anæsthesia below umbilicus. Superficial and deep reflexes of legs and abdomen absent. Tenderness to pressure on first and

second lumbar vertebræ. Complete paralysis of bladder and rectum. Bedsore on left buttock and blister on sole of left foot.

Progress.—The bedsore got deeper and larger and the skin over both heels sloughed. Cystitis developed although the bladder was carefully washed out. The temperature, hectic from the first, soon became pyæmic in character. There were frequent rigors, the temperature rising as high as 107·4° on one occasion. The patient rapidly emaciated. There was constant vomiting during the last three days of life.

Post-mortem examination.—Projecting into the left pleural cavity just above the diaphragm was a soft tumour, the size of a large orange. It was firmly adherent to the left sides of the bodies of the tenth, eleventh, and twelfth dorsal and first lumbar vertebræ and did not pass across the mid-line towards the right. On opening the spinal canal it was found that the tumour had projected inwards for a considerable distance without involving the dura mater or the spinal cord, simply displacing and flattening the latter.

2. *Myelitis.*—Male, æt. 38, admitted April 6th, died September 1st, 1888. Patient was quite well up to April, 1887. He then had difficulty in passing water, soon followed by weakness of the legs, so that he fell if he attempted to stoop. On July 11th, 1887, he had a sudden and rapid increase in the paralysis, within two hours losing all power of movement and sensation from the waist downwards. No improvement followed during the ensuing nine months.

Condition on admission.—Well-nourished man. Large bedsore over sacrum. Lower extremities drawn up, being tightly flexed at knees and less so at hips, and completely paralysed. Occasional violent twitchings of both legs without apparent external stimulus. Complete loss of sensation from about the level of umbilicus in front and the twelfth dorsal vertebra behind downwards but no definite line of demarcation. Retention of urine and constipation. Knee-jerks absent but foot-jerks present. Plantar reflexes present, abdominal absent. No affection of upper extremities. Ophth. normal. Heart and lungs normal.

Progress.—Urine drawn off by catheter. Bowels never acted without purgatives or enema. July 2nd he had a rigor, and the temperature, which had previously been normal, soon became of a hectic type, being high in the evening, normal in the morning. Some improvement took place in sensation. During August vomiting was frequent. Patient gradually got weaker and died on September 1st.

Post-mortem examination.—Body much emaciated. Legs flexed on pelvis. Deep bedsores over sacrum and buttocks.

Spinal cord.—Membranes and vertebral column normal. The entire dorsal region of the cord was smaller than normal and very soft. On section grey matter obscured and containing small cavities, the results of necrosis; no marked congestion or sign of hæmorrhage past or present. In the lumbar region the grey matter was a little pinker than normal and obscure in its outlines. In the sacral region there was ill-defined translucent change in the lateral columns. Probable degeneration of the columns of Goll in the cervical region and of the fasciculi graciles in the medulla.

Brain.—Ascending parietal convolutions atrophied.

Bladder hypertrophied, mucous membrane congested.

Lungs œdematous in parts. Other organs normal.

XIII.—MISCELLANEOUS.

1. *Ulceration, perforation, and obstruction of trachea by caseous bronchial gland.*—Male, æt. 5, admitted November 29th, discharged December 9th, re-admitted on the 18th and died on the 19th. On November 25th he had a violent fit of coughing and dyspnœa, and he had similar attacks frequently until admission. He had previously been well.

Condition on admission.—Breathing rapid and laboured and accompanied with stridor. Face pale, lips slightly blue. Pulse 144. Temp. 97°. Chest moving with difficulty; loud rhonchi over both lungs, resonant all over. An emetic was at once given and after vomiting patient was relieved.

Progress.—On the 30th he seemed comfortable and breathed easily; took food well. He continued to improve and was thought well enough to go home on December 9th. On the 18th he was readmitted on account of severe dyspnœa which had come on that morning. The dyspnœa was more marked on expiration. He died twelve hours after readmission.

Post-mortem examination.—Body well nourished. The larynx and upper part of trachea healthy. Just above the bifurcation of the trachea on the left side there were enlarged glands. One of these was found to project into the trachea through an ulcerated aperture to the edges of which it was firmly adherent. It was caseous, of the size of a hazel nut, and of tolerably firm consistence. It completely obstructed the left bronchus and nearly completely the right. The lungs presented a certain but not extensive amount of collapse. The other organs were healthy.

2. *Pneumothorax resulting from the perforation of œsophageal ulcer into the left pleura.*—Male, æt. 33, admitted September 7th and died on the 10th. History of alcoholism. He had an attack of dyspnœa after a drinking bout eighteen months previously. He had been drinking heavily for two weeks when on the 6th of September, at midnight, he was attacked with severe vomiting and was caught by a severe pain all over the abdomen and chest, causing him to fall down. He was brought to the hospital at 3 a.m. on the morning of the 7th complaining of abdominal pain and vomiting.

Condition on admission.—He was pale and excited. Pulse 94. Temp. 98·6°. Abdominal walls rigid. Diaphragm acting little if at all. Lungs resonant in front, dulness behind over lower half of left with other signs of fluid.

Progress.—Sixteen ounces of turbid yellow fluid was drawn by the aspirator off from the left side on the afternoon of the 7th and morphia was ordered hypodermically. On the 8th there were marked signs of pneumothorax, tympanitic resonance, absent vocal fremitus, tubular breathing, bruit d'airain. He had much dyspnœa and this continued to the end. On the 9th there was again dulness at the left base. On the 10th he was blue and collapsed.

Post-mortem examination.—At lower end of œsophagus were two simple ulcers with clean-cut edges and without thickening. The larger, which was longitudinal, and about two inches by half an inch, had perforated into left pleura.

3. *Patent foramen ovale in a man æt.* 48 *who died from cirrhosis of the liver.*—Male, æt. 48, admitted May 25th and died June 23rd.

History.—He apparently had had no cardiac symptoms. Probably syphilis

twenty years previously, also yellow fever and ague. Alcoholic. Pain in lumbar region for six months. Enlargement of abdomen for six weeks.

Condition on admission.—Thin, slightly jaundiced; complained of abdominal pain. Numerous scars on head and body. Abdomen distended but no ascites. Liver and spleen felt below ribs.

Heart.—Soft-blowing, somewhat prolonged murmur, beginning with the first sound and ceasing before the second, louder with inspiration, fainter with expiration, not heard at the back or axilla, loudest at lower end of sternum, well marked at the apex, inaudible at right base.

Progress.—The character of the murmur varied. It was not so distinctly audible one day as another; it was prediastolic in time, it disappeared on long inspiration and returned after expiration, audible one day only at base, another only at lower sternum. The jaundice deepened, delirium developed, and patient died on June 23rd.

Post-mortem examination.—No ascites. *Liver* cirrhotic. *Heart.*—Right ventricle dilated; foramen ovale patent, but the orifice was oblique and partially valvular. Interventricular septum natural. Valves healthy.

SURGICAL REPORT.

1888.

By E. SOLLY, M.B., F.R.C.S.

Preface.

The present report has been drawn up on the same general lines as its predecessors, cases admitted on more than one occasion for the same affection being recorded as single cases, except where the readmission was due to relapse after apparent cure, or to the development of a different disease.

Attention is directed to the following cases as offering points of interest:

1. Two cases of traumatic tetanus treated by excision of the scar and sedatives (especially chloral hydrate) cured.
2. Five cases of popliteal aneurysm (one "diffuse traumatic") cured.
3. Two cases of hip disease with abscess, treated by aspiration and injection of glycerine and iodoform, one completely cured.
4. Two cases of concussion followed by convulsion and paresis (hemiplegia), recovery without operation.
5. A case of meningeal hæmorrhage without fracture, cured by trephining.
6. Three cases of fractured spine, and one of doubtful fracture.
7. Two cases of punctured wound of pleura cured.
8. A case of traumatic hydronephrosis, cured by aspiration.

9. A case of compound fracture of pelvis, with extra-peritoneal rupture of bladder, cured.

10. Four cases of separation of epiphysis.

With regard to the general surgical practice of the hospital, the dressing most usually employed has been one of iodoform gauze and salicylic wool, sublimate gauze being occasionally used, a layer of boric acid lint being generally interposed between it and the skin. A lotion of 2½ to 5 per cent. carbolic acid has been almost invariably used as a disinfectant at operations and dressings; sublimate, chloride of zinc, and boric acid solutions have been occasionally employed. Mops of cotton wool or gauze wrung out in antiseptic solutions have been extensively used at operations in place of sponges, except for intra-abdominal sponging.

Note.—In the statistical tables cases have been recorded as cured when discharged as no longer requiring in-patient treatment to complete the cure; this has especial reference to the simple cases of fracture.

General Surgical Statement, not including the Ophthalmic Cases.

Number of surgical beds	241[1]
„ of patients in hospital, January 1st, 1888	366
„ of surgical do. „ „ „	206
„ of patients in „ December 31st, 1888	353
„ of surgical do. „ „ „	192
„ of patients treated to a termination in 1888	2337[2]

	Total.	Males.	Females.
Discharged cured	1716	1153	563
„ relieved	316	176	140
„ unrelieved	129	94	35
Died	176	108	68
Totals	2337	1531	806

Average number of deaths 7·5 per cent.
„ „ days in hospital 33·91.

[1] Including William, Anne, and Magdalen Wards, and counting small Wards as one bed each.

[2] Total including ophthalmic cases 2586.

TABLE I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not reported.
GENERAL DISEASES.																		
Erysipelas	22	15	6	2	7	4	8	4	2	4	30	5	...	1	...	...	1	...
Pyæmia	3	2	2	2	...	...	...	...	1	...	...	2	1	2	...	...	...	...
Syphilis—																		
Primary	1	2	...	...	1	1	...	1	...	...	...	...	...	2	...	...	...	1
Secondary	...	24	...	...	17	5	2	...	...	...	...	...	1	3	8	9	2	1
Tertiary	1	7	...	...	1	3	2	1	1	...	...	...	1	...	...	...	5	2
Congenital	1	2	1	1	1	...	...	...	...	...	1	...	...	...	1	...	1	...
Tetanus	3	...	...	1	...	1	1	...	...	...	1	1	1	...	...	...	...	...
LOCAL DISEASES.																		
Carcinoma—																		
Scirrhus of breast	...	34	...	...	...	...	4	12	12	6	...	...	1	4	11	7	11	...
Do. (recurrent)	...	8	...	...	...	...	...	5	2	1	...	...	...	...	3	...	5	...
"Duct cancer" of breast (recurrent)	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Pectoral lymph gland	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Upper jaw	1	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...
Chin	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Do. (recurrent)	1	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...
Intestines	...	1	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Rectum	2	1	...	...	...	...	...	2	1	...	...	...	...	...	1	1	1	...
Bladder (recurrent)	3	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	3	...
Liver	...	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Peritoneum	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Ovary	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Epithelioma—																		
Nose	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Cheek	1	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...
Do. (recurrent)	3	...	...	...	...	...	1	...	1	1	...	...	...	...	1	...	2	...
Lip	4	...	...	...	...	...	...	...	2	2	...	...	...	...	3	...	1	...
Tongue	9	...	...	...	...	...	...	2	5	2	...	...	...	1	4	2	2	...
Floor of mouth	4	...	...	...	...	...	...	2	2	...	...	...	...	2	1	1	...	...
Tonsil	1	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...
Submaxillary region (recurrent)	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Larynx	4	...	...	...	...	...	1	3	...	...	...	...	...	...	2	1	1	...
Penis	2	...	...	...	...	...	...	...	1	1	...	...	...	1	...	1	...	...
Vulva	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...
Cervix uteri	...	2	...	...	...	...	...	...	2	...	...	...	...	...	...	1	1	...
Upper jaw	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Sole of foot	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...

according to authorised Nomenclature.

Duration of residence.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
1	14	16	5	1	...	...	...	...	34	1	...	2	4 readmissions.
1	4	...	...	...	...	...	...	...	...	...	...	5	4 included in "acute bone cases" in Special Summary, q. v.
...	...	1	2	...	...	...	...	...	1	2	...	...	1 transferred from Adelaide Ward.
...	3	9	9	3	...	...	...	...	9	13	1	1	1 death from dorsal myelitis and bronchitis.
...	1	4	1	...	2	...	...	...	5	3	...	...	
...	...	2	1	...	...	...	...	...	1	1	...	1	1 death from acute tuberculosis.
1	...	...	2	...	...	...	...	...	2	...	...	1	See Special Summary. 1 readmission.
...	7	10	15	2	...	...	...	...	25	1	3	5	5 transferred for erysipelas. 1 death from pyæmia.
...	1	5	2	...	...	...	...	...	8	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	At margin of breast; encapsuled.
...	...	1	...	...	...	...	...	...	1	...	...	...	Suppurating; adherent to margin of breast.
...	...	1	...	...	...	...	...	...	...	...	1	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	"Sudoriparous carcinoma" (microscop.).
1	...	...	...	...	...	...	...	...	...	...	1	...	
...	...	...	1	...	...	...	...	...	...	..	...	1	Cæcum.
...	...	...	2	1	...	...	...	...	...	2	...	1	
...	...	...	2	...	1	...	...	..	...	2	...	1	All readmissions; 1 for third time.
...	...	1	...	...	...	...	..	...	...	...	...	1	Apparently commencing in gall-bladder; gall-stones.
...	...	...	1	...	...	...	...	...	...	...	...	1	Readmission. Lumbar colotomy in January, 1887, for obstruction.
...	...	...	1	...	...	...	...	...	...	...	...	1	Transferred to "Home" for operation.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	2	...	1	...	...	...	...	...	2	1	...	...	All readmissions; 1 for sixth time.
3	...	1	...	...	...	...	...	...	2	...	2	...	1 at own request.
...	1	4	4	...	...	...	...	...	5	1	1	2	Floor of mouth also involved in 4.
2	...	...	1	1	...	...	...	...	1	...	2	1	1 readmission for recurrence.
1	...	...	...	...	...	...	...	...	...	...	1	...	
1	...	...	...	...	...	...	...	...	...	...	1	...	Excision of tongue in 1887.
...	1	1	1	...	...	1	...	...	...	2	1	1	Tracheotomy in 2.
...	...	1	...	1	...	...	...	...	2	...	...	...	Inguinal glands involved in 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	1	1	...	...	...	...	...	...	...	1	1	...	
...	1	...	...	...	...	...	...	...	...	...	1	...	
...	...	...	...	1	...	...	...	...	1	...	...	...	

TABLE I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic	Not reported.
LOCAL DISEASES—*continued.*																		
Rodent ulcer	4	1	...	...	...	...	...	1	1	3	...	...	...	...	...	...	5	...
Sarcoma—																		
Skin	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Bone, central	2	1	...	...	1	1	1	...	...	...	...	...	...	...	1	1	1	...
„ peripheral	6	1	...	...	3	1	1	1	...	1	...	1	...	2	3	1	...	...
Do. (recurrent)	3	...	...	...	...	...	2	1	...	...	...	...	...	...	1	...	2	...
Thyroid	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Face	3	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	3	...
Sterno-mastoid	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...
Pelvis	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Buttock	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Breast	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Testis	3	...	...	...	...	...	2	1	...	...	...	...	...	...	...	2	1	...
Abdomen	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Undetermined—																		
Thyroid	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Mediastinum	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
Bladder	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Abdomen	...	...	1	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Lymphadenoma	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Myxoma of back	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
Papilloma of skin	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
„ of mucous membrane	2	5	2	1	2	1	...	...	1	1	...	...	...	1	...	1	5	...
Polypus of vagina	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
„ naso-pharyngeal	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Adenoma of breast	...	8	...	...	...	3	4	1	...	...	...	...	...	1	1	1	5	...
Venous angioma of lip	1	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...
Nævus	3	2	2	2	1	...	...	...	...	...	...	...	...	...	1	...	4	...
Nævoid	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Submaxillary tumour	...	2	...	...	1	...	1	...	...	...	...	...	...	...	...	...	2	...
Fibroma	1	1	...	...	...	1	1	...	...	...	...	1	...	...	...	...	1	...
Fibro-myoma of uterus	...	3	...	...	...	...	2	1	...	...	...	...	...	...	...	...	3	...
Molluscum fibrosum	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Neuroma	4	...	...	...	...	1	...	...	2	1	...	...	...	...	...	...	4	...
Lipoma	5	9	...	...	1	2	4	6	...	1	...	...	...	1	1	...	12	...
„ (doubtful)	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
Exostosis (spongy)	4	...	...	...	2	2	...	...	...	...	...	...	...	1	...	...	3	...

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
...	2	2	1	...	...	...	...	...	4	...	1	...	4 of face; 1 of scalp. 1 readmission.
...	...	...	1	...	...	...	...	...	1	...	...	...	Of leg.
...	1	1	1	...	...	...	...	...	3	...	...	...	All myeloid. 1 of radius; 2 of inferior maxilla.
...	...	4	1	...	2	...	...	...	3	2	1	1	3 of superior maxilla; 3 of femur; 1 of tibia.
...	...	...	...	...	..	...	...	...	1	...	...	2	1 of superior maxilla; 1 of inferior do.; 1 of femur.
...	...	...	...	...	1	...	...	...	...	...	...	1	Readmission. Ligature of common carotid.
...	...	1	1	1	...	...	...	...	...	3	...	...	3 readmissions. 1 ligature of common carotid.
...	...	1	...	...	...	...	...	...	...	...	1	...	
...	...	1	...	...	...	...	...	...	...	...	...	1	Myxo-sarcoma.
...	...	1	...	...	...	...	...	...	...	...	1	...	Unsuitable for operation.
...	...	1	...	...	...	...	...	...	...	1	..	...	Breast removed. Transferred to medical ward for hemiplegia.
...	...	2	1	...	...	...	...	...	2	...	1	...	
...	1	...	...	...	...	...	...	...	...	...	1	...	Secondary to sarcōma of testis (operation 1887).
...	1	...	...	...	...	...	...	...	...	...	1	...	No operation advisable.
...	1	...	...	...	...	...	...	...	...	...	1	...	Transferred to medical side.
...	1	...	...	...	...	...	...	...	...	...	...	1	"Malignant disease."
...	1	...	...	...	...	...	...	...	...	...	1	...	Operation refused.
...	1	...	...	...	...	...	...	...	...	...	1	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	1	2	5	...	...	...	...	...	4	3	...	...	1 of cheek and tongue; 2 of larynx; 1 of bladder; 3 of urethral orifice. 3 readmissions.
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	
...	2	5	1	...	...	...	...	...	8	...	...	...	7 fibro-adenoma; in 1 stroma somewhat embryonic in character (micros.).
1	...	...	...	...	...	...	...	...	...	...	1	...	Left at own request.
...	1	1	2	...	...	1	...	...	2	3	...	...	3 of face; 1 of tongue and pharynx; 1 of hand.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	2	...	...	...	...	..	...	2	...	...	...	"Chondro-adenoma."
...	...	...	1	...	1	...	...	...	...	...	...	...	1 of thigh; 1 of abdominal wall.
...	1	1	...	1	...	...	...	...	...	2	1	...	1 readmission.
...	1	...	...	...	..	...	...	...	1	...	...	...	Some nævoid structure at base.
...	...	2	2	...	...	...	...	...	...	...	...	...	All in amputation stumps.
...	...	...	...	...	...	...	...	...	14	...	...	...	
...	1	...	...	...	...	...	...	...	...	...	1	...	Tumour in right femoral ring at first reducible. Operation refused.
...	2	1	1	...	...	...	...	...	3	1	...	...	1 multiple; 1 of humerus; 1 of pubes; 1 subungual.

Table I.—*Abstract, showing Diseases in Classes,*

Disease.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not reported
Local Diseases—*continued.*																		
Cysts—																		
Dermoid	1	3	...	...	3	...	...	1	...	...	...	...	...	...	...	...	4	...
Branchial	1	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Sebaceous	4	2	...	...	...	3	2	...	...	1	...	...	...	...	...	...	6	...
Serous	1	2	...	...	...	2	...	...	1	...	...	...	...	...	1	...	2	...
Mylohyoid	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Ovarian	...	8	...	...	...	2	...	3	2	1	...	...	...	1	2	2	3	...
Fibro-cystic of uterus	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...
Glandular	2	1	...	...	...	...	2	1	...	...	...	...	1	...	...	1	1	...
Hydatid	3	...	...	...	...	2	...	1	...	...	...	...	...	...	1	1	1	...
Nervous System.																		
Chronic neuritis	1	...	...	..	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Spastic hemiplegia	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Brachial monoplegia	2	..	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...
Paræsthesia of hand	1	1	...	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...
Neuralgia, 5th nerve	5	...	...	...	...	...	1	1	1	2	...	...	...	...	...	...	5	...
„ lumbar	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Spasmodic tic, facial neuralgia	1	1	...	...	...	...	...	...	1	1	...	...	...	...	...	...	2	...
Circulatory System.																		
Aneurysm	5	...	...	...	...	1	2	2	...	...	...	...	2	2	1	...	...	...
Do. (recurrent pulsation)	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...
Phlebectasis	11	2	...	...	...	8	4	1	...	...	...	...	...	1	...	1	9	2
Thrombosis	...	5	...	...	...	2	1	1	1	...	...	3	1	...	...	1	...	...
Varicocele	22	...	...	...	12	7	2	...	...	...	1	2	...	3	1	1	10	4
Hæmatoma	10	3	2	...	3	3	4	...	1	...	...	...	...	...	...	...	...	...
Ductless Glands.																		
Bronchocele	3	6	...	...	2	1	1	3	2	...	...	...	...	...	2	1	6	...
Respiratory System.																		
Chronic laryngitis (syph.)	...	1	...	...	..	1	...	...	...	...	...	...	...	...	...	...	1	...
Empyema	3	...	1	1	...	...	1	...	...	...	...	...	...	...	...	2	...	...

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
s. 4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
.	1	2	1	...	...	...	...	...	4	...	...	...	1 over sternum; 1 of forehead; 1 of chin; 1 at inner canthus.
.	2	...	...	...	...	...	...	...	2	...	...	...	
1	1	4	...	...	...	...	...	...	6	...	...	...	1 previous operation in 1884.
.	1	2	...	...	...	...	...	...	2	1	...	...	1 cystic hygroma; 1 of shoulder; 1 of thigh.
.	1	...	...	...	...	...	...	...	1	...	...	...	
1	...	2	2	3	...	...	...	...	4	...	...	4	
.	2	...	...	1	...	...	...	...	...	1	1	1	1 case had cyst removed from intestinal wall in 1884 (reported in 'Path. Soc. Trans.,' vol. xxxvi).
.	...	3	...	...	...	...	...	...	3	...	...	...	1 of submaxillary gland; 1 of parotid; 1 galactocele
.	1	1	1	...	...	...	...	...	3	...	...	...	1 of face; 1 of neck; 1 of transverse mesocolon (reported in 'Lancet,' No. 3391, 1888).
.	...	...	...	1	...	...	...	...	...	...	1	...	Old injury to shoulder (brachial plexus).
.	...	...	...	1	...	...	...	...	1	...	...	...	Old disease of cerebrum. Amputation of forearm.
.	...	1	1	...	...	...	...	...	1	1	...	...	Reported in 'Lancet,' No. 3403, 1888.
.	1	...	1	...	...	...	...	...	...	1	1	...	Old injury to median nerve 1; division of ulnar nerve 1.
.	1	2	2	...	...	...	...	...	4	...	...	1	1 of second division; 4 of third division. 1 death from erysipelas.
.	1	...	...	...	...	...	...	...	...	1	...	...	? Spinal or calculus.
.	...	1	1	...	...	...	...	...	...	2	...	...	Second readmission (excision of Meckel's ganglion, 1887) 1.
.	...	...	1	3	...	...	1	...	5	...	...	...	See Special Summary.
.	...	1	...	...	...	...	...	...	1	...	...	...	
2	1	2	6	2	...	...	...	...	9	3	1	...	Abdomen 1; right lower extremity 2; left do. 8; not stated 2.
.	1	3	1	...	...	...	...	...	3	1	...	1	Right lower extremity 4; left do. 1.
2	1	11	...	...	...	...	...	...	19	...	3	...	Double 2; left 18; not stated 2.
.	...	...	...	...	...	...	...	...	13	...	...	...	
1	1	1	4	1	1	...	...	...	6	1	2	...	5 cystic; 1 exophthalmic (male).
.	...	...	1	...	...	...	...	...	...	1	...	...	O'Dwyer's intubation.
.	...	2	...	...	1	...	...	...	1	...	...	2	Removal of ribs 1.

TABLE I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not re-
LYMPHATIC SYSTEM.																		
Lymphangitis	3	1	...	1	1	...	...	2	...	...	2	...	1	...	...	...	...	
Adenitis	2	...	...	...	...	2	...	...	...	...	...	...	1	...	1	...	...	..
„ suppurating	9	8	1	4	5	2	2	...	2	1	...	5	5	1	2	2	2	..
Tuberculosis of glands	6	5	1	4	3	2	1	...	...	...	...	..	...	1	1	1	8	..
DIGESTIVE SYSTEM.																		
Acute tonsillitis	...	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	..
Chronic do.	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	..
Stricture of œsophagus	1	1	...	...	1	...	...	...	1	...	...	...	...	...	2	...	...	..
Hernia—																		
Inguinal, reducible	19	...	3	...	5	3	2	...	5	1	...	1	2	...	...	3	13	..
„ strangulated	25	...	4	...	...	1	5	3	6	6	23	1	...	...	...	...	...	
„ irreducible	8	...	...	...	1	3	...	1	1	2	...	..	...	...	...	...	8	..
Femoral, strangulated	5	23	...	...	...	3	3	7	6	8	26	2	...	...	...	...	...	..
Umbilical, irreducible	...	4	...	...	...	1	3	...	...	...	...	...	...	...	...	...	4	..
„ strangulated	1	3	1	...	...	...	1	...	1	1	2	2	...	...	...	...	...	..
„ irreducible	1	2	...	...	...	...	3	...	...	...	...	...	...	...	...	...	3	..
Ventral	...	2	...	...	...	...	1	...	...	1	...	...	...	...	...	...	1	
Intussusception	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
Obstruction of bile duct	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	..
Umbilical fistula	...	2	...	1	...	...	1	...	...	...	...	...	...	...	1	...	1	..
Hæmorrhoids	16	3	...	...	...	4	3	11	1	...	...	...	...	...	1	1	15	
Stricture of rectum	2	5	1	...	...	2	...	2	2	...	...	...	...	...	2	1	4	..
Hæmorrhage from rectum	...	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	..
Fæcal impaction	...	2	...	...	...	...	...	1	1	...	...	...	...	...	1	...	1	..
Prolapsus ani	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	..
Fissure of anus	3	4	...	...	1	2	2	1	1	...	...	...	...	1	1	1	4	..
Fistula in ano	17	4	...	...	1	5	5	7	2	...	...	2	3	2	5	2	5	
Hepatic abscess	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	..
Acute enteritis	2	...	1	...	...	...	...	...	...	1	1	1	...	...	...	...	...	..
GENITO-URINARY SYSTEM.																		
Orchitis	2	...	1	...	...	...	1	...	...	...	1	...	...	...	...	...	1	.
Epididymitis	8	...	...	...	3	4	1	...	...	...	4	1	2	1	...	...	...	.
Abscess of testis	2	...	1	...	1	...	...	...	...	...	...	...	1	1	...	...	...	.
Tubercle of testis	2	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	1	.
Hydrocele of epididymis	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	.
„ of tunica vaginalis	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
rs. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
1	2	...	1	...	...	...	...	...	4	...	...	...	
..	1	...	1	...	...	...	...	...	2	...	...	...	
..	4	11	2	...	...	...	...	...	15	2	...	...	
..	1	8	2	...	...	...	...	...	7	4	...	...	Family history of phthisis in 2.
1	...	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	
..	...	...	...	2	...	...	...	...	1	1	...	...	
1	3	2	10	2	1	...	...	...	13	3	2	1	See Special Table I for all hernia cases.
4	6	4	1	...	...	...	...	...	21	1	...	3	
3	3	...	2	...	...	...	...	...	5	1	1	1	
7	2	13	5	1	...	...	...	...	21	...	...	7	
2	...	1	1	...	...	...	...	...	4	...	...	...	
2	1	1	...	...	...	...	...	...	2	...	...	2	
..	...	...	...	...	...	...	...	...	1	1	1	...	
1	...	...	1	...	...	...	...	...	1	...	...	1	1 in scar of abscess opened in Adelaide Ward, 1886.
1	...	...	...	...	...	...	...	...	...	...	...	1	Inflation; laparotomy.
..	...	1	...	...	...	...	...	...	...	...	...	1	Cholecystotomy.
..	...	1	...	...	1	...	...	...	1	1	...	...	1 biliary, at umbilicus; 1 fæcal (? tubercular).
..	2	14	2	1	...	...	...	...	19	...	...	...	All operated upon. 1 had glycosuria.
2	1	3	1	...	...	...	...	...	3	1	2	1	Previous operation in 2. Fatal case; no cause found P.M.
..	1	...	...	...	...	...	...	...	...	1	...	...	? cause.
..	1	1	...	...	...	...	...	...	2	...	...	...	
..	1	...	...	...	...	...	...	...	1	...	...	...	Readmission.
..	...	6	1	...	...	...	...	...	5	2	...	...	
..	7	6	6	2	...	...	...	...	18	2	...	...	3 transferred for erysipelas. Phthisis in 2; do. (suspected) in 2.
..	...	...	...	1	...	...	...	...	1	...	...	...	Dysentery, tropical.
1	1	...	...	...	...	...	...	...	...	...	...	2	1 ? croton oil before admission. 1 died before admission to ward.
..	...	2	...	...	...	...	...	...	2	...	...	...	Radical cure of hernia 5 years previously in 1.
..	6	2	...	...	...	...	...	...	7	1	...	...	1 discharged on account of insanity.
..	...	2	...	...	...	...	...	...	2	...	...	...	Gonorrhœa 1.
..	...	...	2	...	...	...	...	...	2	...	...	..	Castration in both. Left testis removed 3 years previously in 1.
..	1	...	...	...	..	...	...	...	1	...	...	...	Encysted spermatocele; tapped and injected.
..	...	...	...	...	...	...	...	...	10	1	...	...	Radical cure 4 (cellulitis 1), all cured; tapping and injection 5, all cured; tapping 2.

Table I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not re-
Genito-urinary System— *continued.*																		
Phimosis	4	...	2	...	...	2	...	...	...	...	...	...	...	...	...	...	4	
Paraphimosis	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
Gonorrhœa	...	20	...	...	9	11	...	...	...	...	1	1	6	5	4	2	1	
Warts	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	
Non-infecting chancre	5	1	...	...	4	1	1	...	...	...	1	2	1	2	...	...	...	
Tubercle of breasts	...	1	...	...	1	...	...	1	...	..	...	...	...	...	...	...	1	
Chronic mastitis (simulating carcinoma)	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Mammary abscess	1	8	...	...	3	5	...	...	...	...	1	1	3	1	2	...	...	
Labial abscess	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	
Endometritis	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	
Perimetritis	...	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	
Parametritis	...	6	...	...	...	4	2	...	...	...	...	1	1	1	...	2	1	
Ovaritis	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
Recto-vaginal fistula	...	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	
Hypertrophy of labia	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Urethral abscess	6	...	...	...	...	...	3	...	2	1	...	...	...	...	...	...	...	
„ hæmorrhage	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	
„ stricture	33	...	...	...	...	7	12	4	8	2	...	...	1	2	...	2	28	
Incontinence of urine	2	...	...	...	1	...	...	...	...	1	...	...	...	...	1	...	1	
Retention of urine	10	...	...	...	...	...	3	1	1	5	7	1	...	...	...	...	2	
Extravasation of urine	2	...	...	...	...	...	...	...	2	...	1	...	...	1	...	...	...	
Urinary fistula, renal	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
„ „ urethral	6	...	...	...	...	...	...	5	1	...	...	...	...	2	2	...	2	
„ „ recto-vesical	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	
Cystitis	2	1	...	...	1	...	...	1	...	1	...	...	...	...	1	1	1	
Hypertrophy of prostate	4	...	...	...	...	...	...	...	...	4	...	...	...	2	...	1	1	
Hæmaturia	3	1	...	...	...	2	...	1	1	...	...	...	...	1	1	...	2	
Calculus of kidney	1	1	...	...	1	...	1	...	...	...	...	...	...	...	1	...	1	
„ in bladder	12	1	2	2	...	1	1	2	1	4	...	1	...	2	3	1	4	
„ in urethra	4	...	2	1	...	...	1	...	...	...	3	...	...	...	...	...	1	
Hydronephrosis	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	
Pyonephrosis	...	2	...	...	...	1	...	...	...	1	...	...	...	...	2	...	...	
Perinephric abscess	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	
Tubercle of kidney and prostate	2	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1	1	
Dysuria	3	...	...	...	...	...	1	1	1	...	...	...	...	...	1	...	2	

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
ys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
1	3	...	...	...	...	...	...	...	4	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	Reduced under anæsthetic.
1	1	5	9	4	...	...	...	...	17	1	2	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	4	1	1	...	...	...	...	...	5	1	...	...	1 complicated with paraphimosis.
...	...	...	1	...	...	...	...	...	1	...	...	...	Removed. Specimen in Museum. See 'Lancet,' No. 3431, 1889.
...	...	...	1	...	...	...	...	...	1	...	...	...	Amputation. Axillary glands enlarged.
...	...	4	2	2	...	...	...	...	7	1	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	Complicated with fibroid. Transferred to Adelaide.
...	1	2	1	1	...	...	1	...	4	2	...	...	3 suppurating.
...	1	...	...	...	...	...	...	...	...	1	...	...	
...	...	...	...	1	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
3	2	...	...	...	1	...	...	...	3	2	...	1	3 with stricture; 2 admitted with retention; 1 with phthisis and epididymitis.
1	...	...	...	...	...	...	...	...	1	...	...	...	No cause discovered.
2	6	14	10	1	...	...	...	...	21	7	1	4	2 left at own request. Death from suppression 2; pyæmia 1.
1	1	...	...	...	...	...	...	...	1	...	1	...	1 circumcised for phimosis; 1 refused treatment.
2	3	4	...	1	...	...	...	...	8	1	...	1	5 due to enlarged prostate; stricture in 3.
...	1	...	1	...	...	...	...	...	1	...	...	1	
...	...	...	...	...	1	...	...	...	...	1	...	...	After perinephritic abscess.
...	...	...	6	...	...	...	...	...	4	2	...	...	Incision in 5. 1 followed traumatic rupture 6 weeks previously.
...	...	...	...	1	...	...	...	...	...	1	...	...	Lateral lithotomy 6 months previously.
...	2	...	1	...	...	...	...	...	1	2	...	...	2 with enlarged prostate.
...	2	1	1	...	...	...	...	...	...	4	...	...	
...	1	2	1	...	...	...	...	...	2	1	1	...	1 ? chronic urethritis; 2 ? tubercle of bladder.
...	...	...	1	1	...	...	...	...	1	...	...	1	1 P.M.—Pyonephrosis communicating with colon. Nephrectomy 1.
1	2	7	2	1	...	...	...	...	10	...	2	1	1 developed scarlatina before operation.
...	1	1	2	...	...	...	...	...	4	...	...	...	All impacted. 1 removed by forceps; 3 by incision. 1 developed scarlatina after operation.
...	1	...	...	...	...	...	...	...	...	...	1	...	Readmission. See Injuries to Abdomen.
...	1	...	...	1	...	...	...	...	1	1	...	...	Aspiration 1; incision 1.
...	...	1	...	...	...	...	...	...	...	1	...	...	Incision.
...	...	2	...	...	...	...	...	...	...	2	...	...	1 left at own request.
2	1	...	...	...	...	...	...	...	...	2	1	...	Cause not ascertained.

Table I.—*Abstract, showing Diseases in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not reported
Osseous System.																		
Acute periostitis—																		
Femur	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Tibia	4	...	...	...	4	...	...	...	...	...	3	1	...	...	...	...	...	...
Chronic periostitis—																		
Ilium	..	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Femur	2	1	...	2	...	1	...	...	...	...	...	...	1	1	1	...	...	...
Rib	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Acute epiphysitis—																		
Multiple	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Humerus	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Tibia	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Chronic epiphysitis—																		
Tibia	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Fibula	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Iliac abscess	3	...	2	1	...	...	...	...	...	...	1	...	...	2	...	...	...	...
Osteitis	2	2	1	1	...	...	2	...	...	...	...	...	1	...	...	...	3	...
Caries—																		
Multiple	...	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	..
Skull	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	..
Mastoid process	4	...	...	2	1	1	...	...	...	...	...	...	1	1	1	1	...	..
Inferior maxilla	1	4	...	1	...	4	...	...	...	...	1	1	1	1	...	1	...	..
Ribs	5	...	...	1	2	...	1	1	...	...	...	...	3	...	1	...	1	..
Humerus	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	..
Pelvis	2	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	1	..
Femur	1	1	...	1	1	...	...	...	...	...	...	1	...	...	...	...	...	
Tibia	3	1	2	...	1	...	1	...	...	...	...	...	...	...	1	...	3	..
Tarsus	5	2	...	1	6	...	...	...	...	...	...	...	2	1	...	...	4	..
Necrosis—																		
Multiple	...	1	...	...	1	...	...	...	...	...	...	..	...	...	...	...	1	..
Nasal bones	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	..
Superior maxilla	1	2	1	...	...	1	...	...	1	...	...	...	...	...	...	2	1	..
Inferior maxilla	3	...	...	2	...	...	...	...	1	...	...	...	...	...	1	...	2	..
Scapula	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	..
Humerus	1	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	..
Femur	8	...	...	1	3	2	...	2	...	...	...	...	...	...	...	1	7	..
Tibia	8	1	1	2	3	1	1	...	1	...	...	...	1	2	4	...	1	
Fibula	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	.
Metatarsus	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	.

according to authorised Nomenclature—continued.

Duration of residence.								Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
...	...	...	1	...	...	...	...	1	...	...	...	
...	1	...	...	...	1	...	...	2	...	...	2	2 deaths from pyæmia.
...	...	1	...	...	...	...	...	1	...	...	...	
...	1	1	1	...	...	...	...	2	1	...	...	1 admitted desquamating after ? scarlatina.
1	...	...	...	...	...	...	...	1	...	...	...	Probably gummatous.
...	1	...	...	...	...	...	...	...	...	...	1	? Congenital syphilis.
...	1	...	...	...	...	...	...	1	...	...	...	? Congenital syphilis.
...	1	...	...	...	...	...	...	...	...	...	1	
...	1	...	...	...	...	...	...	...	1	...	...	
...	...	1	...	...	...	...	...	1	...	...	...	Superior epiphysis necrosed; suppuration into knee-joint.
...	1	2	...	...	...	...	...	1	2	...	...	
1	...	2	1	...	...	...	...	2	1	1	...	2 multiple; 1 of femur; 1 of tibia.
...	...	...	...	1	...	...	...	...	1	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	Readmission.
1	2	...	...	...	...	...	...	...	3	...	1	1 ligature of common carotid for secondary hæmorrhage (fatal case).
3	1	1	...	...	...	...	...	2	3	...	...	Alveolar abscess in 4; 1 also had disease of shoulder-joint.
2	1	...	1	1	...	...	...	...	3	1	1	
...	1	...	...	...	...	...	...	...	1	...	...	
1	...	1	...	...	...	...	...	...	...	1	1	1 death from pyæmia; 1 discharged at own request.
1	...	...	...	...	...	1	...	1	1	...	...	Disease extended to hip-joint in 1.
...	...	...	3	...	...	...	1	...	...	...	...	1 transferred for erysipelas.
...	...	4	2	...	1	...	...	6	1	...	...	1 transferred for scarlatina.
...	...	...	...	...	1	...	...	...	1	...	...	
...	...	...	...	...	...	...	...	...	...	1	...	
1	1	...	...	...	...	...	...	...	3	...	...	
...	3	...	...	...	...	...	...	2	1	...	...	1 readmission.
...	...	1	...	...	...	...	...	...	1	...	...	
...	...	2	...	...	...	...	...	1	1	...	...	1 after old excision for injury to elbow-joint. 1 readmission.
...	...	3	3	2	...	...	...	6	2	...	...	1 after compound fracture. 1 transferred for erysipelas.
...	2	3	2	...	1	1	...	4	5	...	...	2 after compound fracture. 3 transferred for erysipelas.
...	...	1	...	...	...	...	...	1	...	...	...	
...	...	...	...	...	1	...	...	1	...	...	...	

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not re-
OSSEOUS SYSTEM—*continued.*																		
Necrosis—																		
Phalanges	3	1	...	...	1	...	...	...	1	3	...	...	1	1	1	...	1	
Osteitis deformans	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	
DISEASES OF JOINTS.																		
Arthritis—																		
Hip	31	24	11	19	14	7	...	2	...	...	...	1	2	8	15	7	22	
Knee	14	16	1	7	7	11	3	1	...	...	...	...	1	1	5	4	19	
Ankle	7	2	4	1	2	...	...	1	...	1	...	1	...	2	2	...	4	
Metatarsus & phalanges	2	1	...	1	...	...	1	...	1	...	...	...	...	1	...	1	1	
Sacro-iliac	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Shoulder	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	
Elbow	2	2	1	...	3	...	...	...	...	...	...	1	...	1	1	1	...	
Wrist	2	...	...	...	...	...	1	...	1	...	...	...	...	...	1	...	1	
Chronic rheumatoid arthritis—																		
Multiple	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Ankle	...	2	...	...	...	...	...	...	2	...	...	...	...	...	...	2	...	
Acute supp. arthritis, ankle	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	
Anchylosis—																		
Multiple	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	
Hip	5	1	...	...	4	2	...	...	...	...	...	...	...	...	...	...	6	
Knee	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	
Ankle	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	
Elbow	2	1	...	1	1	1	...	...	...	...	1	...	...	...	2	...	...	
Old excision—																		
Hip	5	...	1	3	...	...	...	1	...	...	...	...	...	...	...	1	4	
Knee	1	4	...	1	1	3	...	...	...	...	...	...	...	...	1	2	2	
Loose body in knee	4	1	...	...	...	4	...	1	...	...	...	...	...	...	1	4	...	
Foreign body in knee	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	
Hysterical knee	...	2	...	...	1	1	...	...	...	...	...	...	...	...	...	2	...	
Synovitis—																		
Knee	4	5	...	...	1	5	1	1	1	...	...	...	...	2	3	1	3	
Wrist	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	
Gonorrhœal, multiple	1	1	...	...	1	1	...	...	...	...	...	...	1	1	...	...	...	
" of wrist	...	1	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	
Arthritic pains in hip	...	3	...	2	...	1	...	...	...	1	1	1	...	...	...	...	...	

according to authorised Nomenclature—continued.

Duration of residence.								Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R	U.	D.	
...	2	1	...	...	...	...	...	3	1	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	Skull, spine, pelvis, and scapulæ.
2	10	17	9	6	5	1	3	15	34	2	4	3 transferred for erysipelas, 2 for scarlatina, 1 for diphtheria, 1 for tubercular meningitis. 1 death pyæmia.
3	4	7	11	2	1	...	...	13	12	2	3	
1	...	2	4	1	...	...	...	4	2	3	...	1 following dislocation. 2 transferred for measles, 1 for scarlatina.
...	1	1	...	1	...	...	...	3	...	...	...	2 transferred for erysipelas.
1	...	...	...	...	...	...	...	...	...	1	...	Tubercular.
...	...	...	1	...	...	...	...	1	...	...	...	Tubercular; excision.
1	1	1	...	1	...	...	...	1	2	...	1	
...	1	1	...	...	...	...	...	...	2	...	...	Scraping 1; amputation 1.
...	...	...	1	...	...	...	...	...	1	...	...	
...	1	1	...	...	...	...	...	...	2	...	...	
...	...	1	...	...	...	...	...	1	...	...	...	Amputation of leg.
...	...	...	...	1	...	...	...	...	1	...	...	Following rheumatism; massage.
...	1	1	3	1	...	...	...	4	2	...	...	1 following fracture; 5 from disease.
...	1	...	...	...	...	...	...	...	1	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	
...	...	1	...	1	1	...	...	1	2	...	...	2 following injury; 1 from disease.
1	1	2	1	...	...	...	...	1	3	1	...	1 with lardaceous disease.
...	...	2	...	...	...	...	...	2	3	...	...	1 transferred to Victoria Hospital, Chelsea. 1 in hyperextended position.
1	1	2	...	1	...	...	...	2	...	3	...	Operation in 2.
...	...	1	...	...	...	...	...	1	...	...	...	Needle. Readmission.
1	...	1	...	...	...	...	...	2	...	...	...	1 treated by massage.
...	4	3	...	...	...	...	...	3	6	...	...	? Tubercular 3; syphilitic 2.
...	...	1	...	...	...	...	...	...	1	...	...	Also had tonsillitis. Rheumatic history.
1	1	...	...	...	...	...	...	2	...	...	...	Discharge present.
...	...	1	...	...	...	...	...	...	1	...	...	3 months pregnant.
2	...	1	...	...	...	...	...	3	...	...	...	

Table I.—*Abstract, showing Diseases, &c., in Classes,*

Disease	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not re-
Diseases of Spine.																		
Cervical region	2	4	1	2	...	...	2	1	...	...	...	...	1	...	1	...	3	
Dorsal region	6	7	...	2	5	4	1	...	1	...	...	...	...	2	4	2	5	
Dorso-lumbar region	2	4	...	3	1	2	...	...	...	...	...	...	...	1	2	...	3	
Lumbar region	7	4	...	4	5	1	1	...	...	...	...	...	...	2	...	3	6	
Muscular System and its Appendages.																		
Enlarged bursa	1	7	...	...	2	2	...	3	1	...	...	...	...	1	2	1	4	
Inflamed bursa	6	10	...	...	4	7	4	1	...	...	4	3	5	1	1	...	2	
Ganglion	1	2	...	...	...	...	1	1	1	...	...	...	...	...	...	1	2	
Chronic teno-synovitis	2	2	...	...	1	1	1	1	...	...	...	...	...	1	3	...	...	
Myositis (gummatous)	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	
Deformities.																		
Torticollis	3	2	...	2	2	1	...	...	...	...	...	...	1	...	...	...	4	
Talipes equinus	6	...	2	...	4	...	...	...	...	...	...	...	...	...	...	3	3	
„ equino-varus	4	2	1	3	2	...	...	...	...	...	...	...	...	...	...	...	6	
„ valgus	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	
„ cavus	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	2	
Flat-foot	4	1	...	...	3	...	...	...	...	...	...	...	1	1	...	2	1	
Hammer-toe	7	4	...	1	8	1	...	1	...	...	...	...	...	...	2	1	8	
Hallux valgus	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	
Inversion of little toe	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	
Cicatr. contraction of nose	...	2	1	...	1	...	...	...	...	...	...	...	...	...	...	...	2	
„ „ neck	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	
„ „ elbow	...	2	...	...	1	...	...	1	...	...	...	...	...	...	1	...	1	
„ „ hand	2	3	2	1	1	1	...	...	...	...	...	...	...	2	1	...	2	
„ „ thigh	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
„ „ foot	3	...	1	1	...	1	...	...	...	...	...	...	...	...	2	...	1	
Deviated septum nasi	2	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	
Genu valgum	5	2	1	1	4	1	...	...	...	...	...	...	...	...	...	1	6	
„ varum	1	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2	
Curved tibiæ	1	2	...	1	...	2	...	...	...	...	...	...	...	...	...	...	2	

according to authorised Nomenclature—continued.

Duration of residence.								Result.				Remarks.
Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
1	2	1	1	...	...	...	...	...	5	1	...	Retro-pharyngeal abscess in 1; cervical abscess in 2. 1 transferred for measles.
5	2	2	3	...	...	1	...	1	10	1	1	Dorsal abscess in 5; double psoas abscess in 2. 1 transferred for erysipelas. 2 disease of laminæ.
...	...	...	1	4	1	...	...	...	4	1	1	Lumbar abscess in 2; psoas abscess in 1; hip disease in 1.
1	3	2	3	2	...	...	...	2	7	...	2	Psoas abscess in 3; double abscess in 2; lumbar abscess 5; gluteal abscess 1. 2 deaths from lardaceous disease.
3	1	3	1	...	...	...	...	8	...	...	...	Patellar 5; ischial 1; psoas 1; thigh 1.
2	10	2	...	...	...	...	...	15	1	...	...	11 suppurating; 1 probably tubercular.
...	2	...	...	...	...	...	...	3	...	...	...	2 simple; 1 compound.
1	1	1	...	...	1	...	...	1	2	1	...	2 tubercular; 2 following injury.
...	1	...	...	...	...	...	...	1	...	...	...	Simulating malignant disease.
...	3	2	...	...	...	...	...	5	...	...	...	4 congenital; 1 spasmodic.
1	2	2	1	...	...	...	...	3	3	...	...	Left foot 2; right foot 1; both 3.
...	...	5	...	1	...	...	...	5	1	...	...	Left foot 2; right 1; both 3. 4 congenital.
1	...	...	...	...	...	...	...	1	...	...	...	
1	...	1	...	...	...	...	...	2	...	...	...	
2	1	1	...	1	...	...	...	1	4	. .	...	
4	5	2	...	...	...	...	...	9	...	2	...	Great toe in 2; second toe in 9. Right foot only in 3; left foot 2; both 6.
...	...	1	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	1	...	...	...	From pressure of boot.
1	...	1	...	...	...	...	...	...	2	...	...	1 syphilitic; 1 after sloughing of nævus.
...	...	...	...	1	...	...	...	..	1	...	...	After burn.
1	...	1	...	...	...	...	...	1	1	...	...	1 following burn; 1 from sloughing of skin after reduction of dislocation of shoulder.
1	...	3	1	...	...	...	...	3	2	...	...	4 following burn.
...	...	...	...	...	...	...	...	...	...	1	...	Came up for examination only.
...	1	1	1	...	...	...	...	2	1	...	...	2 following burn; 1 machinery accident. Mickulicz's operation, 'Clin. Soc. Trans.,' 1888.
1	1	...	...	...	...	...	...	1	1	...	...	
...	1	...	4	1	1	...	...	6	...	1	...	Left only 1; both 6. 1 transferred for erysipelas.
...	1	1	...	...	...	...	...	1	1	...	...	2 readmissions.
...	...	...	1	1	...	...	...	2	...	1	...	Both legs in all.

Table I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not re-
Deformities—*continued.*																		
Faulty union—																		
Femur	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	
Bones of leg	2	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	2	
Humerus	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	
Phalanx	1	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	
Contracted knee	2	1	...	1	...	1	...	1	...	...	...	...	...	...	...	2	1	
Spastic cont. of upper ext.	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	
„ of foot	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	
Malformations.																		
Single harelip	1	2	3	...	...	...	...	...	...	...	...	...	...	2	1	...	...	
Double harelip	2	...	2	...	...	...	...	...	...	...	...	...	...	1	1	...	...	
Cleft palate	...	3	...	...	2	1	...	...	...	...	...	...	...	...	...	...	3	
Webbed fingers	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	
Congenital dislocation, hips	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	
Spina bifida	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	
Cryptorchis	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Ectopion of bladder	4	...	2	2	...	...	...	...	...	...	...	...	...	...	1	...	3	
„ of intestines	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	
Imperforate anus	1	3	...	...	...	...	...	...	...	...	...	...	...	2	2	...	...	
Atresia vaginæ	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	
Skin and Cellular Tissue.																		
Sinus	1	3	...	...	...	3	...	1	...	...	...	...	...	...	...	1	1	2
Abscess—																		
Scalp	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	
Face	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	
Sub-maxillary	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	
Neck	3	1	...	...	1	2	...	...	1	...	...	...	3	1	...	...	...	
Axilla	...	2	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	
Arm	1	1	2	...	...	...	...	...	...	...	...	...	1	1	...	...	...	
Abdominal wall	1	1	1	1	...	...	...	...	...	...	...	...	1	1	...	...	...	
Back	3	1	1	1	2	...	...	...	...	...	...	1	1	...	1	1	...	
Chest wall	1	1	1	...	...	1	...	...	...	...	...	1	...	1	...	...	...	
Sacral	...	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	
Ischio-rectal	3	...	...	...	...	1	1	...	1	...	...	...	2	...	...	1	...	
Perinæum	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	
Buttock	5	...	...	...	1	3	...	1	...	...	...	1	...	1	...	...	1	1
Thigh	2	1	...	...	1	...	...	1	...	1	...	1	...	1	1	...	...	

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
ys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
..	...	...	1	...	...	...	...	...	...	1	...	...	Transferred from Victoria Hospital.
..	...	...	...	...	2	...	...	...	1	...	1	...	
..	...	...	1	...	...	...	...	...	1	...	...	...	
..	...	1	...	...	...	...	...	...	1	...	...	...	
..	...	...	...	...	...	...	...	...	1	...	2	...	Old tubercular disease in 1.
..	1	...	...	...	...	...	...	...	...	...	1	...	
..	...	...	1	...	...	...	...	...	1	...	...	...	
..	...	...	3	...	...	...	...	...	1	...	1	1	Death from marasmus before operation.
..	...	...	...	...	...	...	...	...	1	...	...	1	Death from marasmus before operation.
..	...	1	2	...	...	...	...	...	1	2	...	...	
..	...	2	...	...	...	...	...	...	2	...	...	...	
..	...	...	1	...	...	...	...	...	...	...	1	...	
..	...	...	...	...	1	...	...	...	...	...	1	...	
..	...	...	1	...	...	...	...	...	...	...	1	...	
1	...	1	1	...	...	1	...	...	1	1	1	1	1 readmission. Division of sacro-iliac synchondroses in 2 (1 fatal).
1	...	...	...	...	...	...	...	...	...	...	...	1	
..	...	2	2	...	...	...	...	...	3	1	...	...	Fæcal fistula in all. 1 readmission.
..	...	...	...	...	...	1	...	...	1	...	...	...	
...	...	...	2	2	...	...	...	...	4	...	...	...	1 after empyema.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	2	2	...	...	...	...	...	...	4	...	...	...	
...	2	...	...	...	...	...	...	...	2	...	...	...	
1	...	...	1	...	...	...	...	...	1	...	...	1	1 death from pyæmia. 1 transferred for measles.
...	...	2	...	...	...	...	...	...	2	...	...	...	1 at umbilicus, following "typhoid fever."
1	2	1	...	...	...	...	...	...	2	1	...	1	1 death from septicæmia.
...	2	...	...	...	...	...	...	...	2	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	1	1	...	...	1	...	...	...	2	1	...	...	Phthisis in 1.
...	1	...	...	...	...	...	...	...	1	...	...	...	Transferred for erysipelas.
...	1	2	1	1	...	...	...	...	1	3	...	1	Death from cellulitis of thigh.
...	...	2	1	...	...	...	...	...	2	1	...	...	

Table I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not reported
Skin and Cellular Tissue —*continued.*																		
Abscess—																		
Knee	2	...	...	2	...	...	...	...	...	...	...	2	...	...	...	...	...	...
Leg	3	...	2	1	...	...	...	...	...	...	1	...	1	1	...	...	...	...
Foot	1	2	...	1	...	2	...	...	...	...	...	2	...	...	1	...	...	...
Cellulitis—																		
Neck	2	1	...	...	2	1	...	...	...	...	...	2	1	...	...	...	...	...
Orbit	1	1	...	...	...	1	1	...	...	...	2	...	...	...	...	...	...	...
Scalp	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Forearm	15	5	...	...	2	3	4	4	3	4	2	11	5	2	...	...	...	...
Hand	6	4	...	1	...	1	1	2	4	1	2	7	1	...	...	...	...	...
Penis and scrotum	4	...	...	...	1	2	1	...	...	...	1	1	...	1	...	...	...	
Vulva	...	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
Stump (thigh)	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	
Leg	2	3	...	...	...	...	2	...	2	1	1	1	...	2	1	...	...	...
Foot	4	1	...	...	1	...	3	1	...	...	3	1	...	...	...	...	...	...
Abdominal wall	...	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Ulcer—																		
Neck	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	
Groin and vulva	...	1	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Leg	5	1	...	...	...	1	2	2	1	...	...	...	...	...	...	...	6	...
Foot	3	...	...	...	...	...	...	...	3	...	...	...	...	...	1	...	2	...
Suppurating bunion	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...
Corns	1	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...
Painful cicatrix in hand	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...
Suppur. ext. aud. meatus	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Ingrowing toe-nail	3	2	...	...	2	3	...	...	...	...	...	...	...	...	...	1	2	
Cancrum oris	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Carbuncle of face	1	1	...	...	1	1	...	...	...	...	1	1	...	...	...	...	...	...
Œdema of hand	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Lupus of face	2	4	...	...	4	1	...	...	1	...	...	...	...	...	...	1	5	...
Erythema intertrigo	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Eczema	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
Herpes	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Gangrene of foot and leg	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
„ of toes	6	1	...	...	1	...	...	...	2	4	...	...	...	...	...	...	...	...
„ of vulva	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...
Various.																		
Removal of suture from jaw	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
...	2	...	...	...	...	...	...	...	2	...	...	...	Superficial to joint.
...	...	3	...	...	...	...	...	...	3	...	...	...	
...	1	1	1	...	...	...	...	...	3	...	...	...	
1	1	1	...	...	...	...	...	...	3	...	...	...	
1	...	...	1	...	...	...	...	...	1	...	...	1	Optic neuritis and atrophy in 1; septic meningitis in fatal case.
...	...	...	1	...	...	...	...	...	...	1	...	...	
...	2	5	7	2	1	...	...	...	13	3	...	1	
1	2	4	1	1	1	...	...	...	9	...	1	...	
...	...	1	3	...	...	...	...	...	4	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Slight exfoliation of necrosed bone.
...	...	1	3	1	...	...	...	...	5	...	...	...	
...	3	1	...	1	...	...	...	...	5	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	Tubercular.
...	...	1	...	...	...	...	...	...	...	1	...	...	Following scarlatina.
...	2	1	...	2	1	...	...	...	4	2	...	...	
...	...	1	2	...	...	...	...	...	1	2	...	...	2 perforating; ataxic symptoms in 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	Transferred for erysipelas.
1	...	1	...	...	...	...	...	...	2	...	...	...	Admitted for scraping.
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	Scarlatina 3 years previously.
...	1	2	2	...	...	...	...	...	5	...	..	...	
1	...	...	...	...	...	...	...	...	...	...	...	1	P.M.—Double pneumonia and empyema.
...	1	1	...	...	...	...	...	...	1	1	...	...	1 left at own request.
...	1	...	...	...	...	...	...	...	...	1	...	...	Cause not ascertained; ? carpal disease.
...	2	3	1	...	...	...	...	...	3	3	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	...	...	...	...	...	1	...	...	Amputation. "Idiopathic."
...	2	3	1	1	...	...	...	...	3	2	...	2	Diabetic 2; traumatic 1.
...	...	1	...	...	...	...	...	...	...	...	...	1	P.M.—Typhoid fever.
1	...	...	...	...	...	...	...	...	1	...	...	...	

TABLE I.—*Abstract, showing Diseases, &c., in Classes,*

DISEASE.	Sex.		Age.								Duration before admission.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Dys. 1-4	Dys. 5-13	Wks 2-4	Mts. 1-2	Mts. 2-6	Mts. 6-12	Chronic.	Not recorded.
VARIOUS—*continued.*																		
Intestinal colic	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...
Meningitis	1	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Measles	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Acute rheumatism	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Fever	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Hysteria	...	2	...	...	...	1	1	...	...	...	...	...	...	1	...	...	1	...
Dyspepsia	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Constipation	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Functional cardiac derangement	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Malingering	8	...	...	...	...	1	3	4	...	...	...	...	1	1	1	2	3	...
Trivial	12	4	3	2	2	1	4	2	1	1	12	...	2	1	...	...	1	...
Epistaxis	4	3	...	...	...	1	3	2	...	1	6	1	...	...	...	...	...	...
Chloroform narcosis	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Ether	...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
Total "Diseases"	955	554																
	1509																	

according to authorised Nomenclature—continued.

Duration of residence.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
...	1	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	...	1	...	Transferred to Medical Ward.
1	...	...	...	...	...	...	...	...	...	...	1	...	Transferred to No. 8 block.
1	...	...	...	...	...	...	...	...	...	...	1	...	Transferred to Medical Ward.
...	...	1	...	...	...	...	...	...	1	...	...	...	Student; no notes.
...	2	...	...	...	...	...	...	...	2	...	...	...	
1	...	...	...	...	...	...	...	...	...	1	...	...	Old case of double ovariotomy.
...	1	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	...	...	1	...	History of rheumatism.
...	2	6	...	...	...	...	...	...	1	...	7	...	
9	4	3	...	...	...	...	...	...	13	1	2	...	
4	2	1	...	...	...	...	...	...	7	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	
									1007	279	124	99	
									1509				

Table II.—*Abstract showing Injuries, &c., in*

Injuries.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Hrs. 1-6	Hrs. 7-13	Hrs. 13-24	Dys. 1-3	Dys. 3-6	Dys. +6	Not reported.
General Injuries.																	
Shock	2	1	...	...	1	...	1	...	...	1	2	...	...	...	...	...	1
Burns	28	21	22	9	10	4	3	...	1	...	3	29	...	7	...	...	10
Scalds	16	26	29	3	6	1	...	2	...	1	2	29	...	3	...	...	8
Local Injuries.																	
Contusion of head	3	1	3	...	...	1	...	...	..	...	3	1	...	...	...	...	...
Wounds of scalp	41	10	4	4	9	13	9	8	2	2	25	7	1	6	...	1	11
Concussion	86	28	15	17	25	16	13	15	9	4	86	13	...	7	1	...	2
Fracture of vault of skull	3	...	1	...	...	1	1	...	...	...	1	...	...	...	...	...	2
Do., compound	11	2	1	3	2	2	2	2	1	...	12	...	...	...	...	1	...
Do., depressed	3	2	1	...	2	1	1	...	...	...	4	...	...	...	1	...	...
Do., compound depressed	5	...	...	1	4	...	...	...	...	...	5	...	...	...	...	...	...
Fractures of the base	9	1	1	...	1	3	1	4	...	...	7	2	...	1	...	...	...
Do., doubtful	10	...	...	1	2	1	1	3	1	1	9	...	...	1	...	...	...
Meningeal hæmorrhage	2	1	...	...	1	...	1	1	...	...	2	...	...	...	1	...	...
Contusion of the face	...	2	1	...	...	1	...	...	...	...	2	...	...	...	...	...	...
Wounds of the face	6	2	2	...	...	3	1	2	...	...	6	...	...	...	1	...	1
Comp. fracture sup. maxilla	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
Do., inferior maxilla	3	3	...	...	1	1	3	...	1	...	6	...	...	...	...	...	...
Wounds of the orbit	5	...	...	...	...	...	2	2	1	...	4	...	...	...	...	1	...
„ of the eyeball	2	2	...	1	1	1	1	...	...	...	4	...	...	...	...	...	...
Rupture of the eyeball	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Wound of mouth	1	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...
Hernia cerebri (old gunshot fracture)	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Foreign body in nose (supposed)	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
Injuries to the neck—																	
Contusion of neck	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Wound of neck	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Foreign body in neck	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Wound of larynx	13	1	...	...	...	3	2	7	1	1	12	1	...	...	...	...	1
Fracture of thyroid cartilage	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1
Injuries to the chest—																	
Contusion	4	...	...	...	2	1	1	...	...	...	4	...	...	...	...	...	...
Wound	2	2	...	...	...	3	1	...	...	...	3	...	1	...	...	...	...

Classes, according to authorised Nomenclature.

Duration of residence.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
2	1	...	...	...	...	...	...	...	3	...	...	...	
15	9	9	9	7	...	...	...	...	26	4	...	19	3 transferred for scarlatina, 1 for erysipelas.
10	12	13	6	1	...	...	...	...	30	...	...	12	1 transferred for scarlatina, 2 for nasal diphtheria, 1 for varicella. 1 tracheotomy for œdema glottidis (cured).
4	...	...	...	...	...	...	...	...	4	...	...	...	
19	16	12	4	...	...	...	...	...	47	3	...	1	5 transferred for erysipelas. 2 left at own request. 1 death from delirium tremens.
55	44	10	5	...	...	...	...	...	111	2	...	1	Hæmatoma 4; epistaxis 1; fracture humerus 1; clavicle 2; rib 1. Death from meningitis 1.
3	...	...	...	...	...	...	...	...	...	...	...	3	2 died in casualty room.
1	3	8	1	...	...	...	...	...	11	...	...	2	1 gunshot wound.
3	...	1	1	...	...	...	...	...	3	...	...	2	Trephining in 3.
...	...	3	1	1	...	...	...	...	4	...	...	1	Operation in all; 3 trephined.
4	...	5	1	...	...	...	...	...	5	1	...	4	1 fracture clavicle; 1 humerus; 1 ribs.
...	4	5	1	...	...	...	...	...	10	...	...	...	1 fracture clavicle.
2	...	...	...	...	1	...	...	...	1	...	...	2	Trephining (successful) in 1.
1	1	...	...	...	...	...	...	...	2	...	...	...	
3	4	1	...	...	...	...	...	...	8	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Fracture involving malar bone also.
1	2	3	...	...	...	...	...	...	5	1	...	...	1 transferred to "Home." 1 double fracture.
...	2	2	1	...	...	...	...	...	3	1	1	...	1 gunshot wound reported in 'Lancet,' No. 3418, 1889.
1	2	1	...	...	...	...	...	...	3	1	...	...	Excision in 2. 1 refused operation.
1	...	...	...	...	...	...	...	...	1	...	...	...	Excision.
...	...	1	...	...	...	...	...	...	1	...	...	...	Gunshot; suicidal. See Special Summary.
...	...	...	1	...	...	...	...	...	...	...	...	1	See Special Summary.
...	...	...	1	...	...	...	...	...	...	1	...	...	Nares explored; chronic rhinitis; body not found.
1	...	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	Fragments of glass; accident 4½ years before admission.
4	3	4	3	...	...	...	...	...	7	...	...	7	1 transferred for erysipelas. Burn of trunk 1; wound of wrist 1; wound of penis 1.
...	1	...	...	...	...	...	...	...	1	...	...	...	
1	3	...	...	...	...	...	...	...	4	...	...	...	
1	1	1	1	...	...	...	...	...	3	...	...	1	Gunshot 1, suicidal; pneumothorax 1; emphysema 2.

TABLE II.—

INJURIES.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Hrs. 1-6	Hrs. 7-13	Hrs. 13-24	Dys. 1-3	Dys. 3-6	Dys. +6	Not reported.
LOCAL INJURIES—*continued.*																	
Injuries to the chest—																	
Fracture of ribs	21	1	1	3	1	1	1	4	8	3	19	...	1	1	1	...	...
„ of sternum	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Injuries to the back—																	
Contusion	9	4	...	2	2	2	2	1	3	1	11	...	...	...	1	1	...
Injuries to the spine—																	
Sprain	3	1	1	...	...	...	1	1	1	...	2	1	...	...	...	1	...
Fracture	3	...	...	...	...	...	1	1	1	...	2	1	...	...	...	...	...
„ doubtful	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Injuries to the abdomen—																	
Contusion	13	4	4	6	2	3	1	1	...	...	16	...	...	1	...	...	...
Wound	1	1	...	1	...	...	1	...	...	...	1	...	...	...	...	...	1
Rupture of omentum	1	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...
„ of kidney (?)	3	...	...	1	2	...	...	...	...	...	2	1	...	...	...	...	...
Traumatic peritonitis	4	1	1	1	1	...	1	1	...	...	3	1	...	...	1	...	...
Foreign bodies in œsophagus	1	1	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
Traumatic hydronephrosis	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Injuries to pelvis—																	
Contusion of hip	4	3	...	...	1	2	...	...	...	4	5	...	...	1	1	...	...
„ of perinæum	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Rupture of urethra	3	...	...	...	2	...	1	...	...	...	2	...	...	1	...	...	...
Wound of perinæum	...	4	...	1	2	...	1	...	...	...	3	...	...	1	...	...	...
Rupture of perinæum	...	2	...	...	...	1	...	1	...	...	...	...	...	...	...	2	...
Wound of scrotum	2	...	...	...	1	...	...	...	1	...	2	...	...	...	...	...	...
Fracture of pelvis	5	3	...	2	1	...	3	...	...	2	6	...	...	1	1	...	...
„ „ compound	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...
Separation of sacro-iliac synchondrosis	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Injuries to upper extremity—																	
Contusion of arm	3	...	...	1	1	...	...	1	...	...	2	...	...	...	...	1	...
Wound of arm	7	2	1	...	4	...	1	...	1	2	5	3	1	...	...	...	...
„ forearm	7	7	...	...	...	3	7	4	...	...	14	...	...	...	...	...	...
„ hand	9	2	...	1	2	2	1	2	1	2	8	...	...	1	...	1	1
Needle in hand	...	2	...	...	1	1	...	...	...	...	...	...	...	1	...	...	1

continued.

Duration of residence.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
2	8	8	2	2	...	...	...	...	20	1	...	1	Pneumothorax 3; emphysema 3; rupture of heart 1; fracture of clavicle 3; dislocation of clavicle 2; syphilitic necrosis tibia, 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	
6	6	1	...	...	...	...	...	...	13	...	...	...	
...	4	...	...	...	...	...	...	...	3	...	...	1	1 death from acute tonsillitis and laryngitis.
3	...	...	...	...	...	...	...	...	...	...	...	3	See Special Summary.
...	...	...	...	1	...	...	...	...	1	...	...	...	See Special Summary.
10	3	4	...	...	...	...	...	...	17	...	...	...	Hæmatemesis and melæna in 1.
1	1	...	...	...	...	...	...	...	1	1	...	...	1 discharged at own request.
...	1	...	...	...	...	...	...	...	...	...	...	1	
...	...	3	...	...	...	...	...	...	3	...	...	...	See Special Summary.
...	3	2	...	...	...	...	...	...	4	...	...	1	Abdominal section in 1.
1	...	1	...	...	...	...	...	...	2	...	...	...	False teeth. 1 extracted by forceps, 1 by œsophagotomy.
...	...	...	...	...	1	...	...	...	1	...	...	...	See Special Summary.
1	3	2	1	...	...	...	...	...	7	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	2	...	1	...	...	...	...	3	...	...	...	Perinæal abscess and external urethrotomy 1.
...	...	4	...	...	...	...	...	...	4	...	...	...	
...	...	...	2	...	...	...	...	...	1	1	...	...	
...	...	2	...	...	...	...	...	...	2	...	...	...	
5	...	3	...	...	...	...	...	...	3	...	...	5	See Special Summary.
...	...	...	...	1	...	...	...	...	1	...	...	...	Rupture of bladder (extra-peritoneal).
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	1	1	...	...	...	...	...	...	3	...	...	...	
...	5	4	...	...	...	...	...	...	8	1	...	...	Division of median basilic vein 2 (suicidal); division of ulnar nerve 1.
4	6	2	2	...	...	...	...	...	12	2	...	...	Division of radial artery 7; radial vein 1; ulnar artery 4; median nerve 1; ulnar nerve 1; flexor tendons 3.
3	...	4	4	...	...	...	...	...	10	1	...	...	Amputation of hand 2; of fingers 2; division of tendons 1.
1	...	...	...	1	...	...	...	...	2	...	...	...	Extracted.

TABLE II.—

INJURIES.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Hrs. 1-6	Hrs. 7-13	Hrs. 13-24	Dys. 1-3	Dys. 3-6	Dys. +6	Not reported.
LOCAL INJURIES—*continued.*																	
Injuries to upper extremity—																	
Avulsion of arm	...	1	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...
„ of forearm	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...
Dislocation of shoulder	2	7	...	...	...	1	2	3	1	2	...	...	...	...	1	...	...
„ of elbow (comp.)	2	...	...	...	1	...	1	...	...	...	2	...	...	...	...	...	...
Fracture of scapula	3	...	...	...	...	1	...	1	...	1	3	...	...	...	...	...	...
„ of clavicle	1	4	...	1	...	1	1	...	...	2	3	...	...	...	...	1	1
„ humerus	3	3	...	1	...	1	...	1	1	2	2	1	...	2	...	...	1
Do., compound	3	2	...	...	3	...	2	...	...	...	5	...	...	...	...	...	...
Do., ununited	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...
Radius and ulna	2	1	...	...	1	...	1	...	1	...	1	...	...	...	...	2	...
Do., compound	3	1	...	1	1	1	...	...	...	1	3	...	...	1	...	...	...
Ulna, compound	2	...	...	...	1	...	...	1	...	...	2	...	...	...	...	...	...
Radius	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Hand, compound	8	...	...	1	3	1	2	...	1	...	8	...	...	...	...	...	...
Do., comp. comminuted	2	...	...	1	...	...	1	...	...	...	2	...	...	...	...	...	...
Injuries to lower extremity—																	
Contusion of thigh	2	3	...	...	2	2	...	...	...	1	4	...	...	...	...	...	1
„ of leg	7	1	...	2	2	...	2	2	...	...	8	...	...	...	...	...	...
„ of foot	4	1	...	1	...	3	...	...	...	1	4	...	...	...	1	...	...
Wound of thigh	5	1	...	2	2	...	1	1	...	...	6	...	...	...	...	...	...
„ of knee	8	2	...	1	6	1	2	...	...	...	4	...	...	2	1	3	...
„ of leg	2	2	1	...	1	...	...	...	1	1	4	...	...	...	...	...	...
„ of foot	4	2	...	...	3	...	1	...	2	...	5	...	...	...	...	1	...
Needle in knee	...	2	...	...	2	...	...	...	...	...	...	...	...	1	...	...	1
Dislocation of hip	3	...	...	1	1	...	1	...	...	...	1	...	...	1	...	1	...
„ of scaphoid	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Fracture of neck of femur	5	7	...	...	1	...	1	...	5	5	6	...	...	4	1	...	1
„ of shaft of femur	56	16	20	14	17	2	4	4	4	7	65	...	...	4	2	1	...
Do., compound	2	...	...	1	1	...	...	...	...	...	2	...	...	...	...	...	...
Fracture of patella	22	4	...	...	...	5	7	11	2	1	20	1	...	4	1	...	...
„ of tibia and fibula	68	15	1	6	12	8	24	19	8	5	75	1	2	2	...	...	3

continued.

Duration of residence.									Result.				Remarks.
	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
	...	1	...	...	...	...	...	...	1	...	...	...	Amputation.
	...	1	...	...	...	...	...	...	1	...	...	...	Amputation.
2	2	5	...	...	...	...	...	...	4	4	1	...	All subcoracoid. See Special Summary.
	...	1	1	...	...	...	...	...	2	...	...	...	Fracture of olecranon in 1.
	1	1	1	...	...	...	...	...	3	...	...	...	Through neck 1; of body 2; both scapulæ 1.
1	1	2	1	...	...	...	...	...	3	2	...	...	Fracture of inferior maxilla 1; pneumothorax 1; hæmoptysis 1; pleurisy 1; delirium tremens 1.
	3	2	1	...	...	...	...	...	6	...	...	...	Fracture of radius 2; of tibia 1; of fingers 1; delirium tremens 1; gout (delayed union) 1.
	1	2	2	...	...	...	...	...	5	...	...	...	
	...	...	1	...	...	...	...	...	...	1	...	...	
1	1	1	...	...	...	...	...	...	...	2	...	...	Old fracture, adhesions between bones 1. Left at own request 1.
1	1	1	1	...	...	...	...	...	4	...	...	...	Amputation (forearm) 1.
	...	1	1	...	...	...	...	...	2	...	1	...	
	1	...	...	...	...	...	...	...	1	...	...	...	
	4	3	1	...	...	...	...	...	8	...	...	...	Amputation of hand 1; of fingers 5; suture of tendons 1.
	1	...	1	...	...	...	...	...	2	...	...	...	Resection of fragments 1; amputation of fingers 1.
3	2	...	...	...	...	...	...	...	5	...	...	...	
2	3	3	...	...	...	...	...	...	8	...	...	...	Bilateral laxity of super. tibio-fibular joint 1.
2	2	1	...	...	...	...	...	...	5	...	...	...	
3	1	...	2	...	...	...	...	...	5	...	...	1	Amputation of thigh 1 (recovered). Death from broncho-pneumonia 1.
2	2	3	1	2	...	...	...	...	10	...	...	...	1 transferred for erysipelas. Suppuration in knee-joint 1.
	1	2	1	...	...	...	...	...	4	...	...	...	
1	2	3	...	...	...	...	...	...	4	1	...	1	Death from shock 1.
	2	...	...	...	...	...	...	...	2	...	...	...	
1	...	2	...	...	...	...	...	...	3	...	...	...	1 readmission.
	1	...	...	...	...	...	...	...	...	...	1	...	
	...	...	10	2	...	...	...	...	11	1	...	...	6 intra-capsular (impacted 1); 6 extra-capsular (impacted 1).
1	3	23	32	8	4	...	1	...	68	1	...	3	Comminuted 1; "greenstick" 1; refracture 3; fracture of humerus 1; ribs 1; delirium tremens 2.
	1	...	1	...	...	...	...	...	1	...	...	1	Primary amputation hip 1. Death on 13th day.
	...	9	15	2	...	...	...	...	26	...	...	...	
2	28	46	6	1	...	...	...	...	82	...	...	1	Refracture 1. Death from pyæmia 1. See Special Summary.

TABLE II.—

INJURIES.	Sex.		Age.								Duration before admission.						
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60	Hrs. 1-6	Hrs. 7-13	Hrs. 13-24	Dys. 1-3	Dys. 3-6	Dys. +6	Not reported.
LOCAL INJURIES—*continued.*																	
Injuries to lower extremity—																	
Fracture of tibia and fibula, compound	17	4	1	2	1	3	7	2	2	3	17	2	...	1	...	1	...
Do., comp. comminuted	5	1	...	...	1	2	...	2	...	1	4	1	...	...	...	...	1
Ununited tibia and fibula	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Fracture of tibia	35	10	9	4	12	5	7	2	4	2	38	1	...	4	1	...	1
Do., compound	2	...	...	...	1	1	...	...	...	...	2	...	...	...	...	...	...
Do., comp. comminuted	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...
Fracture of fibula	30	8	...	1	3	9	11	10	4	...	30	2	...	4	1	...	1
„ of foot (compound)	3	...	...	...	...	1	1	1	...	...	3	...	...	...	...	...	...
Do., comp. comminuted	1	1	...	...	1	1	...	...	...	...	2	...	...	...	...	...	...
Separation of epiphysis—																	
Superior femoral	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
Inferior femoral	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Inferior tibio-fibular	2	...	...	...	2	...	...	...	...	...	1	1	...	...	...	...	...
Injuries to joints—																	
Wound of ankle	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...
„ of tarsus	1	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Hæmarthrosis of knee	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...
Injury to ligaments (knee)	2	1	...	...	...	1	...	1	1	...	2	...	...	1	...	...	...
Old injury to shoulder-joint	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Traumatic synovitis of hip	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...
„ „ of knee	18	2	...	...	3	4	8	1	2	2	13	1	1	3	1	1	...
„ „ of ankle	7	2	...	...	...	4	2	1	2	...	7	...	...	...	1	...	...
Total injuries	576	252	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total diseases from Table I	955	554	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total	2337																
Ophthalmic cases not included in above report	125	124	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	249																
Total, including ophthalmic cases	2586																

continued.

Duration of residence.									Result.				Remarks.
s 4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
.	...	3	6	...	3	...	...	...	20	...	...	1	Primary amputation 2; secondary amputation 2. Transferred for erysipelas 2, for measles 1.
.	1	...	2	3	...	...	...	...	5	...	...	1	Primary amputation 1; resection 1; partial resection 1. 1 death from pneumonia.
.	...	...	...	1	...	...	...	...	1	...	...	...	
2	19	14	2	...	...	...	...	...	45	...	...	...	Hæmatoma of calf 2; of groin 1; synovitis of knee 1; refracture 1.
.	...	...	2	...	...	...	...	...	1	1	...	...	Secondary amputation after suture 1; tertiary syphilis 1.
.	...	...	...	1	...	...	...	...	1	...	...	...	
9	20	7	2	...	...	...	...	...	38	...	...	...	Synovitis of ankle 2; of shoulder 1.
.	...	2	1	...	...	...	...	...	2	1	...	...	Symes' amputation 1; dislocation int. cuneiform 1.
.	...	1	...	1	...	...	...	...	2	...	...	...	Amputation of toes 2.
.	...	...	1	...	...	...	...	...	1	..	...	...	Fall (20 feet) on to hip.
.	...	...	1	...	...	...	...	...	1	...	...	...	Foot caught in spokes of wheel.
.	...	2	...	...	...	...	...	...	2	...	...	...	Foot caught in spokes of wheel 1; between bars of railing 1.
.	...	...	...	1	...	...	...	...	1	...	...	...	Irrigation. Transferred for erysipelas (to small ward).
.	...	...	1	...	...	...	...	...	1	...	...	...	Suture of tendons.
.	1	...	...	...	...	...	...	...	1	...	...	...	
.	2	1	...	...	...	...	...	...	3	...	...	...	
.	1	...	...	...	...	...	...	...	...	...	1	...	
.	1	...	...	...	...	...	...	...	1	...	...	...	
1	7	11	1	...	...	...	...	...	18	2	...	...	Gout 1. Discharged at own request 1.
4	4	1	...	...	...	...	..	...	9	...	...	...	Old fracture in 1.
..	...	...	...	...	...	...	...	...	709	37	5	77	
.	...	...	...	...	...	...	...	...	1007	279	124	99	
									2337				
..	...	...	...	...	...	...	...	...	125	104	20	0	
									249				
									2586				

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
REMOVAL OF TUMOURS AND NEW GROWTHS.										
Amputation of breast	...	9*	...	...	...	...	2	4	3	...
Ditto with removal of glands	...	24	...	...	...	...	2	9	8	5
Removal of recurrent growth	...	8	...	...	...	...	...	5	2	1
Carcinoma of chin	1	...	...	...	...	...	...	...	1	...
Epithelioma of cheek	1	...	...	...	...	...	...	...	...	1
„ „ (recurrent)	2	...	...	...	...	...	...	1	...	1
„ nose	1	...	...	...	...	...	1	...	...	...
„ lip	2	...	...	...	...	...	...	...	1	1
„ tongue	7	...	...	...	...	...	...	2	4	1
„ floor of mouth	1	...	...	...	...	...	...	...	1	...
„ penis	1	...	...	...	...	...	...	...	1	1
„ vulva	...	1	...	...	...	...	...	...	...	1
„ cervix uteri	...	1	...	...	...	...	...	...	1	...
„ sole of foot	1	...	...	...	...	...	...	...	...	...
Rodent ulcer	4	...	...	...	...	...	...	1	1	2
Sarcoma of thigh (recurrent)	1	...	...	...	...	...	...	1	...	...
„ radius	1	...	...	...	...	1	...	...	...	...
„ lower jaw	2	...	...	...	1	...	1	...	...	...
„ upper jaw	2	...	...	...	...	...	1	1	...	...
„ breast	...	1	...	...	...	...	1	...	...	...
„ testis	2	...	...	...	...	...	...	2	...	...
„ pelvis	...	1	...	...	...	...	...	1	...	...
„ skin	...	1	...	...	...	...	...	...	1	...
Papilloma of abdominal wall	...	1	...	...	...	...	...	...	...	
„ cheek and tongue	1	...	...	...	...	...	...	...	...	
Polypus of nose	...	1	...	...	...	...	1	...	...	...
Tumour of bladder	1	...	...	...	...	...	...	...	1	...
Urethral caruncle	...	3	...	...	2	1	...	...	...	...
Submaxillary tumours	...	2	...	...	1	...	1	...	...	...
Vegetation on vulva	...	2	...	...	1	1	...	...	...	...
Polypus uteri	...	1	...	...	...	...	1	...	...	...
Paracentesis for peritoneal cancer	...	1	...	...	...	...	1	...	...	...
For adenoma of breast	...	8	...	...	...	3	4	1	...	...
Excision of cæcum	...	1	...	...	...	...	...	1	...	...
„ nævus	1	...	1	...	...	...	...	...	...	...
„ „ degenerated	...	1	...	...	...	1	...	...	...	...
Electrolysis of nævus	1	1	1	1	...	...	...	...	...	...
For removal of neuroma	4	...	...	...	...	1	...	...	2	...
„ exostosis	4	...	...	...	2	2	...	...	...	...
„ fibroma	1	1	...	...	...	1	1	...	...	...
„ fibro-myoma	...	2	...	...	...	...	1	1	...	...

* In two cases the breas

Surgical Operations.

Duration of residence after operation.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
1	1	5	2	...	...	...	...	...	6	1	...	2	Fatal cases: pneumonia and acute myelitis 1; erysipelas 1.
1	3	14	4	2	...	...	...	...	21	...	...	3	Fatal cases: erysipelas 1; pyæmia 1; septicæmia 1.
...	3	4	1	...	...	...	...	...	8	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	"Sudoriparous carcinoma." Readmitted in 3 months for recurrence.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	1	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Readmitted in 5 months for recurrence.
1	1	...	...	...	...	...	...	...	2	...	...	...	
...	2	...	...	...	...	...	...	...	5	...	...	2	Fatal cases: pneumonia 1; erysipelas 1.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	1	...	...	...	...	2	...	...	...	Second operation for removal of glands 1.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	Lateral flap amputation through metatarsus.
...	2	1	1	...	...	...	...	...	4	.	...	...	Excision and scraping.
...	...	...	1	...	...	...	...	...	1	...	...	...	Amputation at hip-joint 1888.
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	1	...	...	...	...	...	...	...	2	...	...	...	Myeloid epulis.
...	1	1	...	...	...	...	...	...	2	...	...	...	Excision.
...	...	1	...	...	...	...	...	...	...	1	...	...	Transferred to medical ward. Died there with growth in brain.
...	...	2	...	...	...	...	...	...	2	...	...	...	Castration.
1	...	...	...	...	...	...	...	...	...	...	...	1	Myxosarcoma, hysterectomy.
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	1	..	...	...	
1	...	...	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	Discharged apparently cured. Readmitted later with recurrence.
...	3	...	...	...	...	...	...	...	3	...	...	...	Scissors 1; cautery 1; both 1.
...	2	...	...	...	...	...	...	...	2	...	...	...	Chondro-adenoma 2.
...	...	1	...	1	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Extracted from vagina by forceps and torsion.
...	...	...	1	...	...	...	...	...	...	...	...	1	Exhaustion.
...	6	2	...	...	...	...	...	...	8	...	...	...	
...	1	...	...	...	...	...	...	...	...	...	...	1	Peritonitis.
1	...	...	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	1	...	...	...	...	...	...	1	1	...	...	1 of pharynx.
...	2	2	...	...	...	...	...	...	4	...	...	...	
1	1	1	1	...	...	...	...	...	3	1	...	...	1 multiple, one exostosis removed (relieved).
...	...	1	...	1	...	...	...	...	2	...	...	...	
...	1	1	...	...	...	...	...	...	...	1	...	1	1 hysterectomy for fibro-cystic tumour (fatal); 1 Apostoli's treatment.

was not entirely removed.

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
REMOVAL OF TUMOURS AND NEW GROWTHS —*continued.*										
For removal of molluscum fibrosum	...	1	...	...	...	1	...	...	...	...
„ myxoma	...	1	...	...	...	...	...	...	...	1
„ lipoma	5	9	...	...	1	2	4	6	...	1
„ ovarian tumour	...	8	...	...	...	2	...	2	3	1
„ cyst of breast	...	1	...	...	...	...	1	...	...	...
„ salivary gland	2	...	...	...	...	...	1	1	...	...
„ enlarged bursa	...	6	...	...	1	3	...	2	...	...
„ dermoid cyst	2	4	...	2	3	...	...	1	...	...
„ sebaceous cyst	4	2	...	...	...	3	1	1	...	1
„ hydatid cyst	3	...	...	...	...	2	...	1	...	...
„ mylohyoid cyst	1	...	...	...	...	1	...	...	...	...
„ cystic hygroma	...	1	...	...	...	1	...	...	...	...
CIRCULATORY SYSTEM.										
Ligation of common carotid	2	...	...	1	...	...	1	...	...	...
„ ulnar	3	1	...	...	...	...	1	1	...	...
„ radial	2	1	...	...	...	1	2	...	...	...
„ superficial femoral	3	...	...	...	...	...	2	1	...	...
„ popliteal	1	...	...	...	...	1	...	...	...	...
Excision of varicose vein	8	1	..	...	...	6	2	1	...	...
„ varicocele	20	...	...	...	12	6	2	...	...	...
RESPIRATORY SYSTEM.										
Tracheotomy	3	...	1	...	...	...	...	1	1	...
Aspiration of empyema	1	...	1	...	...	...	...	...	...	...
Resection of ribs for empyema	2	...	...	1	...	...	1	...	...	...
Intubation of larynx	...	2	1	...	...	1	...	...	...	...
Exploration of nares	...	1	...	...	1	...	...	...	...	...
DUCTLESS GLANDS.										
Partial removal of thyroid	...	4	...	...	1	1	1	1	...	...
Division of isthmus	1	...	...	...	1	...	...	...	...	...
Incision of cysts	1	1	...	...	...	...	...	1	1	...

continued.

Duration of residence after operation.									Result.				Remarks.
ys. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts +12	C.	R.	U.	D.	
..	1	...	...	...	...	...	...	...	1	...	...	...	
..	...	1	...	...	...	...	...	...	1	...	...	...	
..	7	6	1	...	...	...	...	...	14	...	...	...	
4	...	1	3	...	...	...	...	...	4	...	...	4	See Summary.
..	1	...	...	...	...	...	...	...	1	...	...	...	
..	2	...	...	...	...	...	...	...	2	...	...	...	Parotid 1; submaxillary 1.
..	2	4	...	...	...	...	...	...	6	...	...	...	5 patellar; 1 of thigh.
..	5	...	1	...	...	...	...	...	6	...	...	...	2 branchia cysts and fistulæ.
2	1	3	...	...	...	...	...	...	6	...	...	...	1 in fistula cases. See Erysipelas Table.
..	1	2	...	...	...	...	...	...	3	...	...	...	2 in neck; 1 transverse mesocolon, removed by laparotomy.
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	
...	1	...	1	...	...	...	...	...	...	1	...	1	Hæmorrhage from sarcoma 1; from cervical abscess 1 (fatal). See also "Sarcoma of thyroid" (fatal case), Special Summary.
2	1	...	1	...	...	...	...	...	4	...	...	...	
...	2	...	1	...	...	...	...	...	3	...	...	...	2 also included under "Suture of tendons."
...	...	...	1	1	1	...	...	...	3	...	...	...	1 also included in "Amputations of thigh." See Special Summary, "Sarcoma of thigh."
...	...	...	...	...	...	...	...	1	1	...	...	...	Diffuse traumatic aneurysm. Excision of ruptured portion.
...	...	4	4	1	...	...	...	...	9	...	...	...	
...	1	13	6	...	...	...	...	...	20	...	...	...	
...	...	...	...	...	...	...	...	...	1	1	...	1	Œdema glottidis, scald 1; recurrent sarcoma of thyroid 1 (subsequent ligature of c. carotid), fatal; epithelioma of larynx 1, relieved.
...	...	1	...	...	...	...	...	...	...	...	...	1	Incision 3 days before death.
...	...	1	1	...	...	...	...	...	1	...	...	1	Estlander's operation 1 (fatal); previously incised and rib resected.
...	...	1	1	...	...	...	...	...	...	2	...	...	Syphilitic stenosis 1; stricture after thyrotomy for papilloma 1.
...	...	...	1	...	...	...	...	...	...	1	...	...	Supposed foreign body, not found.
...	1	2	1	...	...	...	...	...	4	...	...	...	1 recurrence after previous excision (no appearance of malignancy).
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	1	1	...	...	...	...	...	...	1	1	...	...	

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
LYMPHATIC SYSTEM.										
Removal of glands	2	2	...	...	1	1	1	...	1	...
Scraping caseous glands	4	2	1	4	1	...	...	...	...	...
NERVOUS SYSTEM.										
Nerve stretching	1	...	...	...	...	...	...	1	...	...
„ suture	2	2	...	...	...	1	...	2	...	1
Resection of nerve	2	...	...	...	...	...	1	...	...	1
Exploration of brachial plexus	1	...	...	...	...	...	1	...	...	...
DIGESTIVE SYSTEM.										
Œsophagotomy	...	1	...	...	...	...	1	...	...	...
Hepatic abscess	1	...	...	...	...	...	...	1	...	...
Cholecystotomy	1	...	...	...	...	1	...	...	...	...
Umbilical fistula	...	1	...	...	...	...	1	...	...	...
Colotomy	2	1	...	...	...	...	...	2	1	...
Herniotomy, femoral	2	8	...	...	...	...	3	1	1	5
„ umbilical	...	2	1	...	...	...	...	...	...	1
„ ventral	...	1	...	...	...	...	...	...	...	1
Radical cure, inguinal	15	1	2	...	5	5	...	...	4	...
„ „ strangulated	6	...	1	...	...	1	1	1	2	...
„ femoral	...	2	...	...	...	1	1	...	...	...
„ „ strangulated	2	12	...	...	...	1	1	4	4	4
„ ventral	...	1	...	...	...	...	1	...	...	...
Intestinal obstruction	1	...	1	...	...	...	...	...	...	...
Rectotomy	2	2	1	...	...	2	1	...	...	...
Fistula in ano	15	4	...	...	...	4	5	7	2	1
Fissure of anus	3	4	...	...	1	2	2	1	1	...
Hæmorrhoids	16	3	...	...	...	4	3	11	1	...
Imperforate anus	1	...	1	...	...	...	...	...	...	...
Ectopion of cæcum	...	1	1	...	...	...	...	...	...	...
GENITO-URINARY SYSTEM.										
Circumcision	6	...	2	...	2	2	...	...	...	...
Hydrocele of tunica vaginalis:										
Excision	1	...	...	...	1	...	...	...	...	...
Incision	3	...	...	...	...	2	1	...	...	...
Tapping and injection	5	...	...	...	...	1	1	2	1	...
Simple tapping	4	...	...	...	...	1	1	...	2	...
Castration	2	...	...	...	...	1	1	...	...	...
Oöphorectomy	...	1	...	...	...	...	1	...	...	...
Amputation of labia majora	...	1	...	...	1	...	...	...	...	...

continued.

Duration of residence after operation.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
...	1	2	1	...	...	...	...	...	4	...	...	...	2 examined microscopically; tubercle found.
1	...	3	2	...	...	...	...	...	5	1	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	Inferior dental.
...	1	3	...	...	...	...	...	...	3	1	...	...	3 immediately after injury; 1 four months after, relieved. Ulnar 3; median 1.
...	2	...	...	...	...	...	...	...	2	...	...	...	Gustatory 1; inferior dental 1.
...	...	...	1	...	...	...	...	...	...	...	1	...	Chronic neuritis after injury.
...	...	1	...	...	...	...	...	...	1	...	...	...	Tooth plate impacted.
...	...	...	1	...	...	...	...	...	1	...	...	...	Tropical.
1	...	...	...	...	...	...	...	...	...	...	...	1	Peritonitis.
...	...	1	...	...	...	...	...	...	...	1	...	...	Incision.
...	...	1	...	2	...	...	...	...	...	2	...	1	Malignant disease of rectum.
...	...	...	...	...	...	...	...	...	5	...	...	5	See Special Table I.
2	...	...	...	...	...	...	...	...	...	...	...	2	
1	...	...	...	...	...	...	...	...	...	...	...	1	
...	...	...	...	...	...	...	...	...	14	...	...	2	
3	...	1	2	...	...	...	...	...	3	...	...	3	
...	...	1	1	...	...	...	...	...	2	...	...	...	
2	...	8	3	1	...	...	...	...	12	...	...	2	
...	...	...	1	...	...	...	...	...	1	...	...	...	Intussusception; inflation; laparotomy.
1	...	...	...	...	...	...	...	...	...	...	...	1	3 for stricture; 1 for ischio-rectal abscess (phthisis), relieved.
...	1	2	...	...	1	...	...	...	3	1	...	...	
1	7	5	5	1	...	...	...	...	16	3	...	...	Ligature 2; ligature and excision 16; clamp and cautery 1.
...	4	3	...	...	...	...	...	...	5	2	...	...	
...	5	14	...	...	...	...	...	...	19	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	Attempt to cover by operation failed. Reported at Pathological Society, March, 1889.
1	...	...	...	...	...	...	...	...	...	...	...	1	
1	4	...	...	...	...	...	...	...	6	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	Radical cure.
...	...	3	...	...	...	...	...	...	3	...	...	...	
2	2	1	...	...	...	...	...	...	5	...	...	...	
...	2	1	1	...	...	...	...	...	3	1	...	...	Orchitis 1, with reaccumulation.
...	...	2	...	...	...	...	...	...	2	...	...	...	Orchitis (tubercular ?); hernia testis 1.
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	1	...	...	...	...	...	...	...	1	...	...	...	

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
GENITO-URINARY SYSTEM—*continued.*										
Hydronephrosis	1	...	...	1	...	...	...	...	...	...
Pyonephrosis	...	1	...	...	...	...	...	...	...	1
Nephrectomy	...	1	...	...	1	...	...	...	...	...
Exploration of kidney	2	1	...	...	...	1	2	...	...	...
„ bladder (suprapubic)	1	...	...	...	...	...	...	...	...	1
Internal urethrotomy	...	1	...	...	...	...	...	1	...	...
External urethrotomy	1	...	...	...	1	...	...	...	...	...
Perinæal puncture	2	...	...	...	...	...	1	...	1	...
Perinæal section	6	...	...	...	...	...	...	2	3	1
Splitting stricture (Holt's)	1	...	...	...	...	...	1	...	...	...
Urethral calculus	4	...	1	2	...	...	1	...	...	...
Lithotomy, lateral	3	...	1	1	...	...	...	...	1	...
„ supra-pubic	2	...	...	1	...	...	...	1	...	...
Lithotrity	5	1	1	...	...	...	1	1	...	3
Perinæal fistula	1	...	...	...	...	...	...	1	...	...
Extroversion of bladder	2	...	1	1	...	...	...	...	...	...
Amputation for mastitis	...	2	...	...	...	1	...	1	...	...
Atresia vaginæ	...	1	...	...	1	...	...	...	...	...
Recto-vaginal fistula	...	3	2	...	1	...	...	...	...	...
Recto-vesical fistula	1	...	...	...	...	...	1	...	...	...
Perinæoraphy	...	2	...	...	...	1	...	1	...	...
LOCOMOTORY SYSTEM.										
Removal of necrosed bone from—										
Upper jaw	...	1	...	1	...	...	...	...	...	...
Lower jaw	3	...	...	2	...	...	...	...	1	...
Scapula	...	1	...	1	...	...	...	...	...	...
Humerus	...	1	...	...	...	1	...	...	...	...
Femur	7	1	...	1	4	2	...	1	...	...
Tibia	13	...	...	2	4	1	4	2	...	...
Fibula	1	1	1	1	...	...	...	...	...	...
Metatarsus	2	...	...	...	...	...	1	...	1	...
Tarsus	3	1	...	1	3	...	...	...	...	...
Scraping for caries of—										
Humerus	1	...	...	1	...	...	...	...	...	...
Mastoid cells	1	...	...	...	...	1	...	...	...	...
Ribs	1	...	...	...	1	...	...	...	...	...
Femur	2	...	1	...	...	...	...	1	...	...
Tarsus	...	2	...	...	2	...	...	...	...	...
Removal of carious teeth	...	3	...	...	...	2	...	...	1	...
Excision of joints, &c.—										
Shoulder	1	...	...	...	...	1	...	...	...	...

continued.

Duration of residence after operation.									Result.				Remarks.
ys. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
..	...	...	...	1	...	...	...	...	1	...	...	...	Aspiration three times.
..	..	...	1	...	...	...	...	...	1	...	...	...	Aspiration.
..	...	...	1	...	...	...	...	...	1	...	...	...	Pyonephrosis; previous incision.
..	...	1	1	1	...	...	...	...	...	2	...	1	Pyonephrosis.
..	...	1	...	...	...	...	...	...	...	...	...	1	For retention; hypertrophy of prostate.
..	1	..	...	...	...	...	...	...	1	...	...	...	
..	...	...	1	...	...	...	...	...	1	...	...	...	Traumatic stricture.
..	...	...	2	...	...	...	...	...	2	...	...	...	For retention.
..	...	...	...	...	...	...	...	...	3	1	...	2	3 for extravasation; 2 for fistulæ; 1 stricture.
1	...	...	...	...	...	...	...	...	1	...	...	...	
..	1	2	...	1	...	...	...	...	4	...	...	...	1 transferred for scarlatina.
..	...	1	2	...	...	...	...	...	2	...	...	1	Severe cystitis after cystoscopy 1.
..	...	1	1	...	...	...	...	...	2	...	...	...	1 after failure of lithotrity.
..	6	...	...	...	...	...	...	...	6	...	...	...	
..	...	...	1	...	...	...	...	...	1	...	...	...	Scraping.
..	1	...	...	...	1	...	...	...	1	...	...	1	Division of sacro-iliac synchondroses in both; 1 plastic operation as well, cured.
..	...	2	...	...	...	...	...	...	2	...	...	...	1 chronic mastitis; 1 tubercular.
..	...	...	1	...	...	...	...	...	1	...	...	...	
..	...	1	1	1	...	...	...	...	2	...	1	...	2 congenital.
..	...	1	...	...	...	...	...	...	...	...	1	...	Plastic, failed.
..	...	1	1	...	...	...	...	...	1	1	...	...	For rupture during parturition.
...	...	1	...	...	...	...	...	...	...	1	...	...	
...	1	2	...	...	...	...	...	...	2	1	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	1	2	2	3	...	...	...	5	3	...	...	2nd and 3rd operation in 1; excision of elbow 1.
...	...	2	5	2	1	2	1	...	7	5	...	...	
...	...	...	2	...	...	...	...	...	2	...	...	...	1 caries necrotica of superior epiphysis.
...	...	1	...	1	...	...	...	...	2	...	...	...	
...	...	...	2	1	...	1	...	...	3	1	...	...	Scraping operation also in 3.
...	...	1	...	...	...	...	...	...	...	1	...	...	
...	1	...	...	...	...	...	...	...	...	1	...	...	
...	...	...	...	1	...	...	...	...	...	1	...	...	
...	...	1	1	...	...	...	...	...	2	...	...	...	
...	...	...	2	...	...	...	...	...	2	...	...	...	
1	2	...	...	...	...	...	...	...	2	1	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	Tubercular disease.

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
LOCOMOTORY SYSTEM—*continued.*										
Excision of joints, &c.—										
Elbow	1	1	...	1	...	1	...	...	...	...
Hip	7	6	2	5	2	2	...	1	...	...
Knee	...	3	1	...	1	1	...	...	...	...
Ankle	2	...	2	...	...	...	...	...	...	...
Metacarpo-phalangeal	1	...	...	...	...	1	...	...	...	...
Arthrectomy of shoulder	1	...	1	...	...	...	...	...	...	...
„ elbow	1	1	1	...	1	...	...	...	...	...
„ knee	1	2	...	...	1	1	...	1	...	...
„ ankle	...	1	1	...	...	...	...	...	...	...
„ wrist	1	...	...	...	...	1	...	...	...	...
Arthrotomy, knee	1	...	...	...	1	...	...	...	...	...
„ ankle	2	...	...	1	...	...	...	...	...	1
Extraction of needle from finger	...	1	...	...	1	...	...	...	...	...
„ „ hand	...	1	...	...	...	1	...	...	...	...
„ „ over knee-joint	...	2	...	...	2	...	...	...	...	...
„ „ knee-joint	...	1	...	...	1	...	...	...	...	...
Removal of loose body from knee	2	...	...	...	...	2	...	...	...	...
Aspiration of knee	2	...	...	...	...	1	...	1	...	...
„ hip	...	1	...	...	1	...	...	...	...	...
Osteotomy of femur	7	3	...	1	8	1	...	...	...	...
„ tibia	1	1	...	1	...	1	...	...	...	...
„ humerus	1	...	...	...	1	...	...	...	...	...
Resection and suture, non-union of humerus	...	1	...	...	...	...	1	...	...	...
Resection and suture, non-union of tibia and fibula	1	...	...	1	...	...	...	...	...	...
Wire suture, tibia and fibula, compound fracture	2	...	...	...	1	...	...	1	...	...
Primary amputation of—										
Arm	3	1	...	...	...	...	3	...	...	
Hand	3	...	...	...	2	...	...	...	...	
Fingers	8	...	...	1	3	1	2	...	1	...
Thigh at hip-joint	1	...	1	...	...	...	...	...	...	...
„ shaft	1	...	1	...	...	...	...	...	...	...
Leg	2	2	...	1	...	1	...	...	...	
Foot	1	...	...	...	...	1	...	...	...	...
Toes	1	1	...	1	1	...	...	...	...	...

continued.

Duration of residence after operation.									Result.				Remarks.
Dys. 1–4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts. +12	C.	R.	U.	D.	
...	...	...	...	1	1	...	...	...	1	1	...	...	
...	1	...	1	2	3	...	4	2	3	7	...	3	Amputation eventually in 4; double excision 1. See Special Summary.
...	...	...	1	2	...	...	...	...	3	...	...	...	Bones sutured with tendon 1.
...	...	...	...	2	...	...	...	...	1	...	...	1	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	
...	...	1	...	...	1	...	...	...	1	...	...	1	Excision later in 1 (cured). Fatal case: pneumonia.
1	...	...	1	1	...	...	...	...	1	1	...	1	Amputation 3 weeks later in 1 (cured). Fatal case: shock.
...	...	...	...	...	1	...	...	...	...	1	...	...	Transferred for scarlatina.
...	1	...	...	...	...	...	...	...	...	1	...	...	
...	...	...	...	1	...	...	...	...	1	...	...	...	
..	1	...	...	1	...	...	...	...	1	...	...	1	1 followed by amputation in 3 days for pyæmia; fatal.
1	...	...	...	...	...	...	...	...	1	..	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	2	...	...	...	...	...	...	...	2	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	...	...	1	...	1	...	...	...	2	...	...	...	Suppuration 1.
...	...	1	1	...	...	...	...	...	2	...	...	...	Fracture patella.
...	...	...	...	1	...	...	...	...	1	...	...	...	Hip disease and abscess. See Special Summary.
...	...	1	3	5	1	...	...	...	10	...	...	...	6 for genu valgum, double in 4; suppuration and amputation of thigh 1. 1 for genu varum; 2 for ankylosis of hip, infra-trochanteric osteotomy in both; 1 ankylosis of knee, osteotomy above condyles.
...	...	...	...	2	...	...	...	...	2	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	1	...	...	...	...	...	...	...	1	...	...	Ununited fracture.
...	...	...	...	1	...	...	..	...	...	...	1	...	Old osteotomy for rachitic curvature.
...	...	...	...	2	...	...	...	...	2	...	...	...	
1	...	2	1	...	...	...	...	...	3	...	...	1	Fatal case fractured base of skull.
...	...	...	3	...	...	...	...	...	3	...	...	...	Amputation both hands 1.
...	4	3	1	...	...	...	...	...	8	...	...	...	
...	1	...	...	...	...	...	...	...	...	...	...	1	See Special Summary, "Fracture of femur."
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	...	2	2	...	...	...	...	4	...	...	...	
...	...	...	...	1	...	...	...	...	1	...	...	...	"Syme."
...	...	1	...	1	...	...	...	...	2	...	...	...	

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
LOCOMOTORY SYSTEM—*continued.*										
Secondary amputation of—										
Thigh	1	...	...	...	...	...	...	...	1	...
Leg	2	...	...	...	...	...	...	1	...	1
Amputation for disease of—										
Forearm	1	...	...	...	...	...	...	...	1	...
Hand	1	...	...	...	...	1	...	...	...	...
Fingers	1	1	1	...	...	1	...	...	...	...
Thigh	8	6	1	2	3	2	2	1	1	2
Through knee	2	...	...	...	2	...	...	...	...	...
Leg	1	1	...	1	...	...	...	...	1	...
Foot	3	1	...	1	2	1	...	...	...	...
Toes	4	...	1	...	1	...	...	...	2	...
Reduction of dislocation—										
Of shoulder	...	5	...	...	...	...	...	3	...	2
Elbow (compound)	2	...	...	...	1	...	1	...	...	...
Hip	3	...	...	1	1	...	1	...	...	...
Excision of inter-phalangeal joint for hammer-toe	3	3	...	1	4	1	...	...	...	...
Excision of metatarso-phalangeal joint for hallux valgus	1	...	...	...	...	1	...	...	...	...
Tenotomy for club-foot	12	1	2	2	8	1	...	...	...	...
„ hammer-toe	2	...	...	...	1	...	1	...	...	...
„ torticollis	2	2	...	2	1	1	...	...	...	...
Suture of tendons	3	2	...	...	1	1	2	1	...	...
REPARATIVE OPERATIONS.										
Double harelip	1	...	1	...	...	...	...	...	...	...
Single harelip	1	...	1	...	...	...	...	...	...	...
Cleft palate	...	3	...	...	2	1	...	...	...	...
Rhinoplasty	...	2	1	...	1	...	...	...	...	...
Plastic of face	...	1	...	...	1	...	...	...	...	...
„ arm	...	1	...	1	...	...	...	...	...	...
„ hand	1	1	1	...	1	...	...	...	...	...
„ fingers (congenital web)	2	...	2	...	...	...	...	...	...	...
„ foot	1	...	...	1	...	...	...	...	...	...
Skin grafting for ulcer	2	...	...	...	...	...	1	1	...	...

continued.

Duration of residence after operation.									Result.				Remarks.
ys. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts 6–9	Mts 9–12	Mts. +12	C.	R.	U.	D.	
...	...	...	...	1	...	...	...	...	1	...	...	...	"Gritti."
...	...	...	...	2	...	...	...	...	2	...	...	...	
...	...	...	1	...	...	...	...	...	...	1	...	...	Tubercle of wrist; phthisis.
...	...	...	1	...	...	...	...	...	1	...	...	...	
1	1	...	...	...	...	...	...	...	2	...	...	...	
...	...	1	9	3	1	...	...	...	9	2	1	2	10 for tubercular disease of knee; 1 sarcoma; 1 for gangrene. Fatal cases: tuberculosis 1; suppuration and exhaustion 1.
...	...	...	1	...	1	...	...	...	1	...	...	1	1 for necrosis, Carden. 1 S. Smith's—lateral flaps—for sarcoma of tibia; fatal, suppuration and secondary growths.
...	...	...	2	...	...	...	...	...	2	...	...	...	
...	...	...	2	2	...	...	...	...	3	1	...	...	2 Syme; 1 modified Chopart for congenital deformity; 1 Mickulicz for deformity after injury.
...	...	3	...	1	...	...	...	...	4	...	...	...	
2	...	2	...	...	1	...	...	...	5	...	...	...	See Special Summary, "Injuries."
...	...	1	1	...	...	...	...	...	2	...	...	...	Fracture coronoid process 1.
1	...	2	...	...	...	...	...	...	3	...	...	...	See Special Summary.
...	2	4	...	...	...	...	...	...	6	...	...	...	
...	...	1	...	...	...	...	...	...	1	...	...	...	
...	4	4	2	1	2	...	...	...	12	1	...	...	Equinus 5; equino-varus 4; valgus 1; cavus 1; flat foot 2.
...	...	1	...	...	1	...	...	...	2	...	...	...	
...	...	2	1	1	...	...	...	...	4	...	...	...	
1	2	1	1	...	...	...	...	...	4	1	...	...	4 of hand and forearm; 1 of foot (cured). Ligature of radial artery also in 2.
...	1	...	...	...	...	...	...	...	1	...	...	...	5 months old.
...	...	...	1	...	...	...	...	...	1	...	...	...	7 weeks old.
...	...	1	2	...	...	...	...	...	1	2	...	...	
...	1	1	...	...	...	...	...	...	1	1	...	...	
...	...	...	...	1	...	...	...	...	...	1	...	...	Deformity after burn.
...	...	...	1	...	...	...	...	...	...	1	...	...	
...	1	1	...	...	...	...	...	...	1	1	...	...	
...	...	2	...	...	...	...	...	...	2	...	...	...	
...	...	...	1	...	...	...	...	...	1	...	...	...	
...	...	1	...	1	...	...	...	...	1	1	...	...	

TABLE III.—

SURGICAL OPERATIONS.	Sex.		Age.							
	M.	F.	-5	-10	-20	-30	-40	-50	-60	+60
MISCELLANEOUS.										
Exploration of spine	1	...	...	...	...	...	1	...	...	...
Trephining skull	5	2	...	1	3	1	2	...	...	...
Removal of depressed fragments	4	...	...	1	...	1	1	1	...	...
Removal of bullet	1	...	...	...	...	...	...	1	...	...
Exploration for bullet	2	...	...	...	1	...	...	1	...	...
Excision of eyeball	2	1	...	2	1	...	...	...	...	...
Scraping ulcer	1	1	...	...	1	...	...	...	1	...
„ lupus	2	4	...	...	4	1	...	...	1	...
„ corns	2	...	...	...	...	1	1	...	...	...
Forcible replacement of nasal septum	2	...	...	...	1	1	...	...	...	...
Avulsion of great toe-nail	3	2	...	...	2	3	...	...	...	...
Removal of suture from jaw	1	...	...	...	...	...	...	1	...	...
Excision of gumma of neck	...	1	...	...	...	1	...	...	...	...
Plugging posterior nares	2	1	...	...	...	1	...	2	...	...
Excision of cicatrix	4	...	...	...	...	1	1	...	2	...
Tracheotomies for diphtheria, not included in above Table	14	29	32	11	...	...	...	...	...	...
Totals	460	269	...	...	...	...	...	...	...	...
	729									

continued.

Duration of residence after operation.									Result.				Remarks.
s. –4	Dys. 5–13	Wks 2–4	Mts. 1–2	Mts. 2–4	Mts. 4–6	Mts. 6–9	Mts. 9–12	Mts +12	C.	R.	U.	D.	
1	...	...	...	...	...	...	...	...	...	...	...	1	See Special Summary, "Fractures of spine."
1	...	3	1	1	1	...	...	...	5	...	...	2	
1	1	1	1	...	...	...	...	...	2	...	...	2	
..	...	1	...	...	...	...	...	...	1	...	...	...	Base of skull.
..	1	...	1	...	...	...	...	...	1	...	...	1	See Summary, "Hernia cerebri," and 'Lancet,' 1888, No. 3418.
2	1	...	...	...	...	...	...	...	3	...	...	...	
1	...	1	...	...	...	...	...	...	1	1	...	...	1 tubercular; 1 "perforating."
..	...	...	...	...	...	...	...	...	3	3	...	...	
1	...	1	...	...	...	...	...	...	2	...	...	...	
1	1	...	...	...	...	...	...	...	2	...	...	...	
..	1	3	1	...	...	...	...	...	5	...	...	...	Excision of matrix also in 3.
..	1	...	...	...	...	...	...	...	1	...	...	...	Old case epithelioma of tongue.
..	...	1	...	...	...	...	...	...	1	...	...	...	Simulating malignant disease; rapid growth.
2	...	1	...	...	...	...	...	...	3	...	...	...	Epistaxis.
..	1	1	2	...	...	...	...	...	3	1	...	...	2 cases of tetanus. 1 old excision of Meckel's ganglion, see Report, 1886.
27	7	2	7	...	...	...	...	...	10	...	...	33	Done in medical ward.
..	...	...	...	...	...	...	...	...	553	76	5	95	
									729				

SPECIAL SUMMARY.

I. GENERAL DISEASES.

ERYSIPELAS (admitted as such).

For cases arising in hospital see Special Table.

Males 22, females 15=37. C. 34, R. 1, D. 2. Cutaneous 22; cellulo-cutaneous 5; cellular 4; not stated 1.

Causes.—Wounds 15; contusions 2; burns and scalds 4; fractures 1 (femur), 1 (humerus); abscesses 11; chronic ulcer, simple 2, syphilitic 1; lupus 1; necrosis 3; sloughing of umbilical cord 1; chilblain, "broken," 1; removal of toe-nail 1; not stated 1.

Situation.—Head and neck 15; trunk 3; upper extremity 3; lower extremity 15.

Readmissions 4.

2 had relapses while in hospital; 1, æt. 3, having as many as four.

Fatal.—1. Æt. 7 days. Dusky red rash over trunk and limbs, fading on pressure; fine papular rash on face; abrasion on right arm, skin sloughing; boggy and œdematous condition around; sloughy ulceration at point of separation of umbilical cord. Three incisions into arm, one in left pectoral region; blood-stained serous pus evacuated. Death from septic poisoning on 4th day. Temperature during life varying between 99° and 101° F. P.M.—Gangrene of skin of right upper arm and axilla; recent extravasation of blood around right kidney.

2. Æt. 3 weeks. Redness and swelling of thigh noticed one week before admission; ? cause. On admission, erysipelas of both legs and feet; much œdema of feet. On left a gangrenous patch. Temperature on admission 101°; rapidly sank. Death on 2nd day. P.M.—Ulceration under tight prepuce; viscera healthy.

TETANUS.

Males 3. C. 2, D. 1.

Non-fatal.—1. Æt. 23. Fourteen days before symptoms commenced trod on rusty nail, which penetrated the sole of his boot, and wounded the ball of the great toe; no hæmorrhage; wound healed in a week; always painful. First

symptoms: stiffness of jaws in eating. Three days later legs became suddenly stiff while sitting at table, and remained rigid in extended position till admission. Rigidity of trunk muscles gradually set in in the next few days, and continued till admission. On admission, legs extended and rigid; muscles of abdominal wall and back rigid; occasional spasms (opisthotonos); arms stiff, but all movements present, though limited and slowly performed. Jaws closed; risus sardonicus. Slight spasms of legs at frequent intervals, often about three per minute. A small scar under ball of great toe, pressure upon which produced a spasm. Treated with chloral, gr. xv 4tis horis. Scar excised on day after admission; a digital nerve found much thickened and blackened from foreign matter carried in by the nail. Spasms gradually became less frequent, and rigidity slowly disappeared, remaining longest in abdominal muscles (especially in recti). A dull yellowish-red papular eruption developed on legs (extensor surfaces) and abdomen, probably due to chloral, as it disappeared spontaneously when the drug was discontinued. Patient left hospital cured, though weak and anæmic, on 31st day.

2. Æt. 36. Admitted August 21st with lacerated wound of cheek and fracture of coronoid process of inferior maxilla; much brickdust, &c., ground into wound, which, however, healed well. Discharged on 8th day cured, but some stiffness in movements of jaw noticed. Readmitted September 26th with much induration at site of wound; marked wasting and loss of power; facial paralysis. Inability to separate jaws more than one eighth of an inch (this condition had been gradually developing since first discharge from hospital). Under anæsthetic jaws could be separated to about three quarters of an inch, but the stiffness was only partially due to spasm. Second day of admission difficulty in swallowing (fed by tube); spasm of sterno-mastoids and muscles of mastication. Third day, rigidity of recti abdominis; portion of scar in cheek excised under cocaine anæsthesia. Fourth day, some rigidity of lumbar muscles; occasional facial spasms; perspiration copious. From 7th day onwards symptoms subsided steadily, and nutrition improved under liberal supplies of milk (8 pints per diem), beef-tea, wine, &c., which the patient took readily. Discharged cured on 41st day. There had never been any obvious affection of limbs nor opisthotonos. Some slight stiffness in movement of jaw present on discharge. *Treatment.*—Morphia injections, excision of cicatrix, and chloral.

Fatal case.—Æt. 5½. Six days before admission ran a piece of dirty bone into his foot through a hole in boot. Foot swelled up; patient could not walk on it. One day before admission stiffness in back noticed (lumbar region). On day of admission, midday, while at dinner, jaws became fixed. Pain and stiffness in back increased. Went to bed. "Spasms" came on in afternoon, excited by any noise or movement. Admitted in evening with spasm of muscles of mastication; opisthotonos, with spasms of extensors of arms, occurring every few minutes, and excited by the slightest movements. Wound explored under chloroform. Small fragments of bone (foreign bodies) and some semi-purulent, swollen fibrous tissue found, and removed with surrounding tissue immediately after operation. Respiration suddenly ceased (? spasm of glottis). Tracheotomy, and artificial respiration for three quarters of an hour, when heart ceased beating (during the whole time the child not having made any voluntary effort to breathe). P.M.—Internal plantar nerve exposed in operation; wound slightly red but otherwise

healthy. No organic signs of disease, except minute hæmorrhage in the floor of fourth ventricle, with very slight injection of vessels.

SYPHILIS.

Primary.—Male 1, female 2. C. 1, R. 2.

One male admitted with phagedænic chancre, which had developed in a soft sore contracted 5 weeks previously. Rapid destruction of glans; œdema of penis and enlargement of inguinal glands. Cauterised with nitric acid; dressed with (1) carbolic oil, (2) chlorinated soda on 7th day, and (3) lotio nigra and iodoform from 29th day. Much offensive discharge till 20th day, from which date the sore became cleaner, and gradually healed.

The females were admitted with chancres on vulva. One developed a rash on trunk, with slight enlargement of inguinal glands.

Secondary.—Females 24. C. 9, R. 13, U. 1, D. 1. Condylomata 11; congestion of fauces 9; ulceration of fauces 3, of tongue 11, of rectum 4. Eruptions: roseola 5; papular 1; squamous 3. Vaginal discharge 8. *Complications.*—Chronic ovaritis 1; myelitis 1; bronchitis 1; scabies 1; abscess of labium 2; pregnancy (3 months) 1.

Tertiary.—Male 1, females 7. C. 5, R. 3. Caries necrotica of skull 1, of tibia 1; warty vegetations 1; gumma of thigh 1, of leg (suppurating) 1, of labium (suppurating) 1; stricture of rectum 1.

Congenital.—Male 1, females 2. C. 1, R. 1, D. 1. Gumma of thigh (suppurating) 1; ulceration of alæ nasi and palate 1; roseolar eruption appearing 5 weeks after birth 1 (death from acute tuberculosis).

II. LOCAL DISEASES.

TUMOURS.

Carcinoma of breast.—Females 36. C. 35, R. 1, U. 3, D. 5. Right 21, left 14, not stated 1. In 19 the axillary glands affected; in 3 of these the supraclavicular also. In 1 diffuse secondary growths in skin; do. in liver in 1; do. in lungs 1 (see fatal cases). Average duration before admission in 34 cases was 9 months; the extremes being 1 month and 3 years. Married 20, single 3, not stated 13. 2 multiparæ had never suckled with affected breast. History of trauma in 8; mastitis 4; "sore nipple" 2; 1 commenced shortly after parturition. In 1 a simple tumour existed in opposite breast (16 years' duration). Hereditary history in 4. Family history of phthisis in 4. *Treatment.*—Breast and axillary glands removed in 24; breast alone removed in 6; tumour and adjacent portion of breast alone in 2. In 3 operative treatment not considered justifiable. *Nature of growth.*—"Duct carcinoma" in 1; "scirrhus in lymphatic gland tissue" 1; "seirrhus cyst" 1; "typical scirrhus" in the rest. *Complications.*—Erysipelas in 5; septicæmia 1; pyæmia 1; acute anterior polio-myelitis 1.

Fatal cases.

1. Female, æt. 49. "Broken breast" 20 years previously. History of injury on two occasions (last time 6 months before admission, from which time tumour noticed). On admission large growth, freely movable, over chest-wall, adherent to nipple; one enlarged gland in axilla. Operation 5 days after admission; breast and glands removed; wound sponged out with zinc. chlor. (4 per cent. solution) and carbolic lotion; dressed with iodoform and salicylic wool; three drainage tubes, one through separate opening at most dependent part. Death on 2nd day from sloughing of skin and ? septicæmia. P.M.—Commencing decomposition of organs; no definite signs of secondary growth or serious organic disease.

2. Female, æt. 47. Abscess of breast 27 years previously during lactation. No history of injury. Pain in breast 9 months; tumour noticed 7 months. On admission tumour size of pigeon's egg in lower and outer quarter of left breast, freely movable on tissue below, but adherent to skin. No enlargement of axillar glands detected. Operation 2 days after admission; tumour and adjacent parts of breast removed, but not the entire gland; some gaping of wound; healing by granulation progressed favourably. On 36th day weakness in legs complained of, but no objective signs of disease; "weakness" increased, and 15 days later condition became so much worse that Dr. Hadden saw the patient, and found loss of power, with absence of reflexes in arms and legs; no loss of sensation. On the same evening the respiratory muscles became involved in what appeared to be an ascending paralysis, and the patient died. P.M.—Secondary growths in lungs, and a few axillary glands slightly enlarged; anterior cornua of spinal cord, especially in cervical region, somewhat softened and indistinct, but no coarse lesion or obvious disease.

3. Female, æt. 46. No previous history of injury or disease. Tumour noticed 2 months before admission. Large globular mass, mainly external to nipple, but connected with the latter, also slightly adherent to superjacent skin; chain of enlarged glands extending from breast to axilla; lower cervical glands also somewhat enlarged. Operation on 9th day; breast and axillary glands removed; iodoform dressing, changed 6 hours after operation on account of some hæmorrhagic oozing. Temperature ranging from 99° to 103° after operation; rigor on 4th day; repeated on 6th day, when patient became delirious, though not violent; trace of albumen in urine (none before operation) and slight diarrhœa; remained in semi-delirious state, temperature 98° to 103°, till 13th day after operation, when, after a third rigor, secondary venous hæmorrhage took place, stopped with difficulty by pressure. Death from exhaustion and pyæmia on 14th day after operation. P.M.—Abscesses in lung; suppurating cavity in axilla; burrowing among intercostals, but not into pleural cavity.

4. Female, æt. 60. Mastitis 12 months before admission (subsided). Six months before noticed tumour in breast. On admission globular tumour in upper and inner part of breast; adherent to nipple; axillary glands involved. Operation on 6th day; breast and glands removed; iodoform dressing; wound healing well by granulation. Developed erysipelas on 40th day. Death on 74th day. P.M.—Acute pleurisy and pericarditis; early renal disease.

5. Female, æt. 47. Tumour 4 months' duration in breast; glands in axilla enlarged. Operation 1st day after admission; iodoform dressing. Developed

erysipelas on 8th day. Died on 11th day. P.M.—Secondary growths in liver; myoma of uterus; no other organic sign of disease.

Recurrent growth after carcinoma of breast.—Females 8. C. 8. Recurrence occurring 6 weeks, 2 months (2 cases), 8, 13, and 19 months, 4 and 5 years respectively after operation. Three in operation scar; 2 in scar and axillary glands; 3 in axillary glands only. All operated upon, and discharged without complication or sign of recurrence.

"Sudoriparous carcinoma" of chin.—Male, æt. 51. No family history of tumour. No history of syphilis. "Pimple" on chin 9 years, repeatedly shaved off (with much bleeding) during first year; for last 8 years not interfered with; progressive growth till admission; tumour becoming fixed to jaw 9 months before this; ulcerated and painful 3 weeks. On admission tumour "size of orange," hard, tense, ulcerated in parts; thin, semi-purulent discharge. Operation on 4th day; growth removed, together with portion of symphysis of lower jaw; no sign of growth left behind; surface closed in by plastic operation, lateral flaps being taken from neck (Buchanan's method); wound healed well. Discharged without sign of recurrence on 29th day. Readmitted 2½ months later for recurrence in scar and inferior maxilla. Operation impracticable. Microscopical examination of growth showed structure of carcinoma, though appearing to have no connection with the surface; epithelium cells all spheroidal and rather small; no tendency to cornification or formation of "bird-nests."

Carcinoma of cæcum.—Female, æt. 47. Family history of phthisis; none of new growth. Tumour in right iliac region 4 months; blood passed per rectum 3 days before admission. Operation on day after admission to surgical ward (had been 1 month in medical ward); 5-inch incision downwards from 1 inch below umbilicus in median line; tumour of cæcum found; brought out through wound without difficulty; clamped and excised; no extravasation of contents; little hæmorrhage; divided ends of bowel brought together and carefully sutured (Lembert); free end of omentum wrapped around intestine at point of suture, and lightly sutured. Abdomen closed without drainage. Rallied well from operation. Fed on peptonised milk, beef-tea, &c.; no solid food. Dressed for first time on 5th day; wound found to have united; all sutures removed. Later in same day some symptoms of peritonitis developed. Next day wound reopened at 4 p.m.; 2 ounces of pus (not offensive) escaped. Condition rapidly became worse, and death occurred at 6 p.m. P.M.—Intestine united, except at one point of suture, whence leaking had taken place; local suppuration in cæcal region and acute peritonitis.

Malignant disease—

Of rectum.—Male 2, females 1. R. 2, D. 1. Duration before admission 3 months, 12 months, and 18 months respectively. Situation of growth about 2½ inches, 3 inches, and 3½ inches respectively from anus. In the latter case there was a recto-vaginal fistula (see below). Left lumbar colotomy in all 3 cases. In 2 bowel opened at once; in 1 on 10th day. Two discharged relieved, suppuration having occurred in one between muscular planes of abdominal wall, extending into the scrotum, where a counter opening was made. In all 3 cases excision was counter-indicated by the fact that the growth extended beyond the reach of the finger.

Fatal case.—Female, æt. 42. History of jaundice 9 and 11 years previously. Health never very good. Eighteen months before admission difficulty in defæcation, and hæmorrhoids developed. Seven months before admission copious discharge of pus (?) from vagina. Three months before admission profuse hæmorrhage from bowel; since then offensive discharge from vagina and rectum. On examination, large ulcerated tumour in rectum, 3½ inches from anus, partly filling pelvic cavity, and easily felt through abdominal wall on bimanual examination. Recto-vaginal fistula. Left lumbar colotomy on 16th day; intestine sutured to external wound, and opened at once. Sutures gave way on 8th day after operation. Patient's condition too bad to make any interference justifiable. Death from exhaustion on 16th day after operation. P.M.—Extensive ulceration of rectum; masses of new growth in pelvis; secondary growths in liver.

Of bladder.—Males 3, all readmissions. R. 2, D. 1.

Case 1. *Fatal.*—Exploration per perinæum in 1884. Supra-pubic cystotomy in 1886 growth being removed on both occasions. Third admission 1887. Extensive growth in pelvis and iliac fossæ, which gradually extended. Death from gradual exhaustion on 178th day. No operative treatment. P.M.—Multiple villous growths in bladder; large mass of growth (carcinoma) filling half of pelvis; amyloid disease of liver, spleen, and kidneys.

Case 2.—Male, æt. 57. Readmission. Symptoms (hæmaturia, &c.) 16 years. First admission 1885; villous growth removed per perinæum. Second admission 1888. Examined by cystoscope; small lobulated growth seen growing from base of bladder. Supra-pubic cystotomy on 8th day; small villous growth found near urethral orifice on right side, and removed with bladder forceps; a softer and larger rounded tumour projecting from right side of base (? from prostate) also removed, but less satisfactorily, owing to its friable nature causing it to break up into shreds; drainage tube placed in bladder; external wound sutured. No complication. Wound healed on 17th day. Discharged without any symptom of recurrence; supposed "cured."

Case 3.—Same patient as preceding. Readmitted 3 months later for hæmaturia, which commenced shortly after discharge; also fungating growth projecting through scar of abdominal wound. No operative treatment attempted. General condition of patient improved while in hospital. Fungating growth very slightly increased. Discharged relieved on 42nd day.

Of liver.—Female, æt. 59. Three months' history of abdominal swelling. No previous illness. No operative treatment. Death on 16th day. P.M.—Diffuse carcinoma of liver apparently commencing in gall-bladder (gall-stones); secondary growths in omentum, which, with the adherent intestines, formed a large irregular mass in abdominal cavity; smaller growth on surface of diaphragm, and a few in left pleura. No disease of uterus or ovaries.

Of ovary.—Female, æt. 42; married; no children; one miscarriage 3 months after marriage. Catamenia regular, but scanty up to 3 months before admission. Tumour noticed 6 months. On admission smooth rounded tumour reaching to midway between umbilicus and ensiform cartilage. Transferred to "Home" for operation on 45th day. Tumour proved to be a large, solid, columnar-celled carcinoma.

Epithelioma—

Of nose.—Male, æt. 34. Seven years' history of growth. On admission smooth, flattened ulcer, ¾ inch diameter, left side of nose; indurated, sharply cut edge; no glands. Scraped and cauterised on 14th day. Discharged apparently cured on 12th day after operation. Readmitted 4 months later (see year 1889). Microscopical examination = squamous epithelioma.

Of face.—Male, æt. 67. "Crateriform ulcer," 1 inch diameter, in right malar region, occurring near site of old syphilitic ulceration, but said to have actually started from a congenital mole, which had been irritated by combing the whiskers 8 weeks before admission. No enlarged glands. Operation on 5th day; free removal. Discharged cured on 23rd day after operation. Microscopical examination = squamous epithelioma.

Of cheek (recurrent, secondary to epithelioma of lip).

(*a*) Male, æt. 40. Epithelioma of lip removed 2 years previously. No sign of recurrence till 4 months before admission. On admission recurrent growth involving cheek, inferior maxilla, and submaxillary region (where fluctuation could be felt). Operation on 14th day; removal of growth, including portion of inferior maxilla. Suppurating cavity in submaxillary portion of growth. Discharged apparently cured on 24th day after operation.

(*b*) Recurrent growth in cheek, &c., secondary to epithelioma of lip. Growth commenced in 1865. First operation 1873. Operations for recurrence in 1875, 1878, 1885, and 1887 (two operations, May and September). First admission 1888; recurrent growth in cheek; removed; wound healed. Readmitted 6 months later for recurrence in glands of submaxillary region. Operation 3rd day; glands removed; found to be cystic, cysts being filled with degenerated squamous epithelium.

Of lip.—Males 4. C. 2, U. 2 (discharged at own request). Glands affected in 1 case (recurrent). Duration before admission 3 weeks, 3 months, 4 months, and in recurrent case 13 months from first operation (total duration 3 years from commencement of primary growth).

Of tongue.—Males 9; average age of patients 55. Two died (erysipelas 1, pneumonia 1). Two unfit for operation. ? hereditary in 2 cases (father died of "cancer in throat" 1; do. "cancer of rectum" 1). Syphilis 3; irritation from carious teeth 3; excessive smoking 5. 12 months' leukoplakia in 1; glands affected in 7. Advanced phthisis in 1 (no operation). *Treatment.*—Operation in 7, scissors used in all. Sedillot's operation in 1; division of cheek and inferior maxilla (opposite to growth), excision of affected side of tongue and glands in 2 (1 died of erysipelas on 26th day); division of cheek and removal of whole tongue 1 (died on 6th day from pneumonia); simple excision of half tongue 1; excision of growth and neighbouring tissue, *i. e.* less than half tongue, 2. Whitehead's varnish applied after operation in 2.

Of floor of mouth.—Males 4. Two recurrent. Three unfit for operation. In 1 growth removed with scissors; discharged "cured" on 20th day after operation (readmitted and operated upon in 1889, and died a few months after leaving hospital). 1 (unfit for operation) gradually sank from exhaustion; no P.M.

Of tonsil and soft palate.—Male, æt. 47. Unfit for operation. Six weeks' history. Glands in neck involved.

Of larynx.—Males 4. R. 2, U. 1, D. 1. Æt. 44, 52 (same case admitted twice), and 53. Duration before admission 3, 7, and 12 months. History of syphilis 1. Tracheotomy performed in 1; discharged relieved. Tracheotomy 3 months before admission in fatal case.

Fatal case.—No previous illness. Hoarseness and attacks of choking 12 months before admission, attributed to "cold" at first; later to tubercular laryngitis. Tracheotomy 3 months before admission. Admitted for hæmorrhage due to irritation of corroded silver tube, which was replaced by an india-rubber one. On examination by Dr. Semon no new growth nor ulceration seen, but much thickening of arytenoid and ventricular bands; glands in neck enlarged. Two months after admission small portion of growth removed showed signs of epithelioma. One month later fluids swallowed leaked occasionally by side of tracheotomy tube. From 4th month till death increasing growth, which eventually fungated through external wound, and caused increasing difficulty in introducing the tube, which occasionally became blocked by detached fragments of growth and necrosed portions of laryngeal cartilage. Death on 193rd day. P.M.—Pneumonia and empyema; extensive growth in neck around larynx.

Of penis.—Two cases; both cured. Glans and about ¼ inch of corpora cavernosa removed in 1. Amputation close to symphysis pubis in 1, the corpus spongiosum being left projecting about 1 inch beyond the rest, and served to direct the stream conveniently; inguinal glands (slightly enlarged) removed by second operation 3 weeks after amputation of penis.

Of sole of foot.—Male, æt. 62. Indurated ragged ulcer, everted edges, 6 weeks' duration, originating in a lump which had developed 12 months before admission on the site of a hard corn beneath heads of second and third metatarsals. Amputation of toes and heads of metatarsals on 11th day; lateral skin flaps. Some suppuration of wound. Patient discharged cured on 54th day after operation.

Rodent ulcer—

Of face.—Males 4. C. 4. Total duration before admission (including 1 recurrent case) 18 months, 5 years, 5 years, and 15 years. Situation: side of nose 3; malar region 1. *Treatment.*—Excision 3; excision and scraping 1.

Of scalp.—Female 1. Unrelieved. Ten years' duration. Several previous operations. On admission large ulcer, base being partly formed by exposed skull, and partly by exposed dura mater (pulsating). No cerebral symptoms.

Sarcoma—

Of skin of leg.—Female, æt. 55. Cured. Duration 13 years. Removed by operation. On microscopical examination, hæmorrhagic spindle-celled sarcoma.

Of bone.—Central (all myeloid).

(*a*) *Of radius.*—Male, æt. 28. Two years' history of swelling over upper end of radius; several small superficial lipomata in forearm. Urine found to be albuminous on admission (cause not ascertained). Excision of tumour and expanded upper end of radius; wound healed without complication.

(*b* and *c*) *Of inferior maxilla* (myeloid epulis).—Male 1, æt. 35; female 1,

æt. 17. Commencing in connection with carious bicuspid in both. Operation: removal of tumour with carious teeth and neighbouring portion of alveolar process. Both cured.

Peripheral—

Of superior maxilla.—Males 2, female 1. C. 1, R. 2.

(*a*) Male, æt. 36. Five months before admission was treated in casualty for extensive wound of left cheek, which healed well. Three months later swelling noticed in left malar region. On admission tumour, size of tangerine orange, projecting from left side of face, growing from superior maxilla epiphosa; slight upward displacement of eye. Excision of superior maxilla; wound healed well. Discharged without sign of recurrence on 13th day. After operation growth found to be spindle-celled sarcoma, springing from superior maxilla, occupying antrum, and fungating through anterior wall. The patient was readmitted 1 month later for recurrence in mouth, of which he died.

(*b*) Male, æt. 47. Round-celled sarcoma; origin not exactly ascertained (? from ethmoid region); involving the antrum and nasal cavity. Excision of superior maxilla; ethmoid region scraped out. Discharged cured 25 days after operation.

(*c*) Female, æt. 21. Two months' history swelling of face. On admission extensive growth in right superior maxilla, the antrum being filled with a mass of growth in a sloughing condition. Microscopical examination: round-celled sarcoma. Operation refused.

Of lower extremity (*bones*).—Males 4. C. 1, R. 2, D. 1. History of injury in 2; ? hereditary in 1; spindle-celled sarcoma 1; osteoid sarcoma 1. Operation refused in 2.

One case, æt. 71. Admitted with pulsating swelling of popliteal space; 3 months' duration; onset sudden; no history of injury or strain; said to have diminished in size under treatment before admission. General signs suggested aneurysm. Ligature of superficial femoral; stout silk used, with only force sufficient to arrest pulsation. Return of pulsation next day, but much diminution in size of swelling. Twenty-one days later femoral ligatured again; thick catgut; force used to rupture inner and middle coats. No return of pulsation, but slow progressive increase in size. Amputation 3 months after second operation. On examination, spindle-celled sarcoma in popliteal space, extending into and occluding popliteal vein; no sign of aneurysm. Discharged cured 163rd day from admission.

Fatal case.—Male, æt. 17. Six months' swelling over crest of tibia. Examination of small portion = chondrifying sarcoma. S. Smith's lateral flap amputation through knee-joint. Suppuration in upper synovitic pouches; hectic. Death, with signs of secondary growths in viscera, on 160th day after admission. No P.M.

Recurrent sarcoma of bone—

Of inferior maxilla.—Recurrence after operation 4 years previously. Death on 27th day. Secondary growths in abdomen and lungs.

Of face.—1. Recurrence 1 month after excision of superior maxilla (see above); fungation into mouth. Death from pneumonia.

2. Recurrent sarcoma, right orbital region, about 16 years' duration. Many

previous operations. Profuse hæmorrhage from ulcerated surface, arrested by successful ligature of common carotid. Discharged relieved.

Of stump of thigh.—Male, æt. 42. Furneaux Jordan amputation at hip joint 1 year ago for chondrifying sarcoma of femur. Admitted with recurrence in stump (noticed 3 months). Removed by operation; found attached to pelvic bones. Discharged without sign of recurrence 1 month after operation.

Thyroid.—Male, æt. 45. First operation July, 1887, sarcoma of thyroid removed. Second operation November, 1887, readmitted December, 1887, and tracheotomy performed; portion of ulcerated and hæmorrhagic mass removed by écraseur in February and March, 1888. Ligature of common carotid on April 5th for profuse hæmorrhage, followed immediately by hemiplegia and death on 2nd day. P.M.—Extensive growth in neck. No secondary growths on viscera. Cerebral softening.

Breast.—Female, æt. 34. Growth commenced 3 months after last confinement (12 months before admission), size of hen's egg. No enlargement of lymph-glands. Slight milky discharge from nipple on squeezing tumour. Amputation. Wound healed by 16th day, but symptoms of left hemiplegia gradually supervened; transferred to medical ward, where death occurred some months later. P.M.—Sarcoma in brain, &c.

Testis.—C. 2, U. 1. Duration before admission 7 months, 10 months, and ? 5 years. History of injury in 2; in chronic case old history of gonorrhœa, orchitis, and epididymitis; inguinal hernia on same side, for which a truss worn. Enlarged abdominal glands. *Treatment.*—Castration in 2, 1 refused operation.

Of pelvic connective tissue (myxosarcoma).—Female, æt. 42, married, 3 children, youngest 14 years. Abdominal tumour 2 years. Slow progressive growth. No history of peritonitic attacks. Bronchocele 8 years (stationary). Abdominal section, median line; large tumour, 8 inches in diameter, many adhesions; no fluid escaped by puncture with trocar. Incision enlarged; tumour found to spring from between uterus and bladder, latter spread out over lower portion of tumour; ovaries, tubes, and fundus uteri intact. Small subperitoneal cysts on Fallopian tube; small cysts in both ovaries. Bladder wall dissected from tumour, which was removed together with body of uterus, and tube-pedicle fixed at lower angle of abdominal wound. Death on 2nd day from shock and intra-peritoneal oozing. The tumour was solid for the most part, but contained many cysts, and from mucoid softening of some portion superficially resembled thyroid structure. *Microscopical examination.*—Myxosarcoma; cysts due to myxomatous degeneration.

Undetermined malignant disease.—1. Male, æt. 34. Admitted for abdominal tumour noticed 9 months after castration for tumour (? nature) of testis. No operation recommended.

2. Female, æt. 4. Abdominal tumour 1 month's duration (injury 9 months before). Left renal region; operation refused.

3. Male, æt. 52. Tumour of bladder, nature undetermined. Symptoms of dysuria 10 years. Small calculus passed 8 years ago. Death from exhaustion. P.M.—Malignant growth of bladder. Pyonephrosis. Renal calculus.

4. *Intra-thoracic tumour.*—Male, æt. 17. Symptoms 9 months' dyspnœa; sign of intra-thoracic obstruction to circulation. No surgical treatment; discharged relieved.

Cysts.—

Dermoid.—Male 1, females 3. C. 4 (see statistical Table I). In one case, male, æt. 14, the cyst was in floor of mouth and contained clear thin mucous fluid, occupying mid-line but chiefly prominent on right side; had been present since birth. In same case a small sebaceous cyst was present over symphysis menti externally.

Branchial.—Male 1, female 1. C. 2. Æt. 7 and 8. In 1 noticed since birth, 1 three years before admission. In both history of occasional discharge of thick fluid through small puncture in skin over cyst, situated about 1 inch above upper margin of sternum close to anterior edge of sternomastoid. *Treatment.*—Excision of cyst, with long process extending deeply towards pharynx in 1 (specimen placed in museum). Laying open of sinus and drainage in 1.

Sebaceous.—Two of face, 1 behind ear, 1 of back, 1 of glutæal region, 1 of calf.

Serous—

Of shoulder.—Male, æt. 52. Aspiration 6 months before admission; reaccumulation; aspiration again, 32 oz. drawn off. Cause and exact relation not ascertained. Discharged relieved. Still some fluid in cyst.

Of thigh.—Female, æt. 27. Probably bursal. Situation, external aspect of thigh, just below great trochanter, between ilio-tibial band and deeper structures. Cyst excised. Patient discharged cured.

Cystic hygroma.—Female, æt. 21. Fifteen months' duration. Right supra-clavicular region. Excised. On examination multilocular serous cysts. *Microscopical examination.*—Walls of cysts formed of delicate fibrous and areolar tissue; here and there small collection of lymphatic gland tissue.

Ovarian disease—

Cystoma.—1. Æt. 25. Married; 1 child 10 months old (labour difficult, forceps used), never well since. Catamenia appeared during lactation, but ceased 5 months before admission. Enlargement of abdomen noticed 9 months. Growth increasing in rapidity. Frequent attacks of pain and vomiting. *Operation.*—Three-inch median incision. Uterus, 4—5 months pregnant, found in front of tumour; accidentally wounded by trocar; profuse hæmorrhage stopped by clamp forci-pressure. Ovarian tumour found on left side; tapped (thick, viscid fluid), extracted, and removed. Pedicle ligatured in three portions with thick silk. Clamp left on uterus for 10 hours under antiseptic dressing. Abortion on 2nd day. No serious symptoms. Small abscess formed in abdominal incision on 5th day. Incised. Good recovery. Discharge cured on 52nd day after operation.

2. Æt. 51, married, 7 children. Three and a half years symptom, 2½ years tumour noticed. Tapped 7 months before admission, 6 quarts of thin greenish fluid; retapped 3 months later (fluid dark and thick); after tapping many attacks of abdominal pain. Four-inch incision, median line; large multilocular cyst;

no adhesions; tapped; thick, viscid fluid. Tumour extracted and removed. Pedicle ligatured in two portions with thick silk. Right ovary examined, found healthy. Wound sutured; healed without complication. Patient discharged cured on 32nd day after operation.

3. Æt. 25, single; 'ascites' 2 years before admission. Catamenia always irregular. Tumour noticed 5 months. No pain. On admission tumour extending nearly to umbilicus. Three-inch median incision. Multilocular cyst of right ovary; extensive adhesions; abdominal incision enlarged; tumour tapped; thick gelatinous brown fluid. Left ovary slightly enlarged, small parovarian cysts present; both ovaries removed. Pedicle ligatured with thick silk and returned to abdominal cavity. Uninterrupted recovery. Discharged cured on 33rd day after operation.

4. Æt. 43, married, 8 children, youngest 5 years old, 1 miscarriage 4 years ago. Catamenia regular up to admission. Tumour noticed 6 months. No pain except on exertion. Six-inch median incision; large multilocular cyst tapped (thick, grey, gelatinous fluid) and extracted. Pedicle ligatured in two portions. Recovery uninterrupted. Discharged cured on 24th day after operation.

Fatal cases.

1. Æt. 58, widow, no children, no miscarriages. Symptoms and enlargement of abdomen 1 year. Median incision, right ovary; no adhesions. Pedicle ligatured and returned to abdomen. Cyst weighed 19½ oz.; 6 pints of fluid removed. Iodoform gauze dressings; all sutures removed 5th day. Wound healing well. Troublesome cough on 6th day. Slight hæmaturia; insomnia 7th day; temp. 104°; delirious. Death sudden from "exhaustion." P.M.—No peritonitis; stump of right ovary congested; left normal. Thin pus in bladder. Kidneys slightly granular.

2. Æt. 64, widow, 13 children, last stillborn 2 years previous to admission. Paracentesis, 13 pints removed; ovariotomy 5 days later. Median incision; soft adhesions, general over tumour, causing troublesome hæmorrhage. Cautery applied to posterior wall of bladder. Multilocular cyst with much solid matter. Pedicle transfixed and ligatured. Death on 2nd day. Temp. 102°. P.M.—Left ovary contained a cyst. No peritonitis. Signs of chronic and acute enteritis.

3. Æt. 46, married. Six operations for uterine polypi during last 14 years. Median 5-inch incision through umbilicus, under spray; extensive adhesions. Owing to collapsed state of patient anterior part of tumour removed with scissors; bleeding points ligatured; abdomen closed. Death on 2nd day from exhaustion. No P.M.

4. Æt. 58, married, 10 children, youngest 16 years old. Symptoms 2 years. Median incision; large cystic tumour, tapped; thick fluid, dark and grumous in parts, drawn off; tumour extracted and removed. Pedicle ligatured and returned to abdomen. Right ovary normal. Abdominal cavity washed out with boracic solution; no drainage tube. Rallied well from operation. Temperature gradually rose from 3rd day with distension of abdomen. Fourth day wound opened up slightly to allow escape of flatus and small quantity of non-offensive serous discharge from peritoneal cavity; drainage-tube inserted. Death same evening. P.M.—General peritonitis; no obvious structural disease of viscera.

Fibro-cystic tumour of uterus.—R. 1., U. 1., D. 1 (1 and 2 same case). Æt. 39. In hospital 4 years ago with abdominal tumour; removed by abdominal section;

found to be a cyst (? hydatid) in wall of small intestine. At same operation a small subperitoneal fibroid of uterus was found but not interfered with (see 'Path. Trans.,' 1884). Readmitted in present year with tumour in hypogastric region, extending halfway to umbilicus; attached to uterus; discharged unrelieved (no treatment). Readmitted 2 months later; double oophorectomy (tumour found to be fibro-cystic, subperitoneal, attached to upper end of uterus).

Fatal case.—Æt. 46, married, 6 children; last confinement 11 years ago; pain 20 years. Tumour noticed only 4 or 5 months. Abdomen always large. On admission large tumour with fluid thrill; no solid growth felt. Abdominal section. Median 3-inch incision, subsequently enlarged. Multilocular cystic tumour; extensive adhesions; cyst-wall "nearly gangrenous," gave way on tapping; some fluid escaped into abdominal cavity. Tumour found attached to uterus; serre-nœud applied around "pedicle" of tumour (thought to be lower part of uterus); tumour and left ovary removed. Abdominal cavity irrigated with boracic solution. Wound closed with pedicle of tumour in lower end. Good recovery from operation, but temperature gradually rose from 3rd day; death on 6th day. P.M.—Slight peritonitis; uterus found to be intact, the serre-nœud having passed around the broad pedicle of the tumour, which had evidently sprung from the fundus uteri. Slight peritonitis. Uterine cavity enlarged (hypertrophy). Right Fallopian tube dilated and containing a little pus.

Cyst of parotid gland.—Male, æt. 32. Eight months' duration. On admission size of hen's egg. *Operation.*—Thin-walled cyst in parotid gland behind ramus of jaw; dissected out; healing by first intention. Discharged cured on 18th day.

Of submaxillary gland.—Male, æt. 45. Tumour in submaxillary region noticed about 10 years; size variable. On admission size of large hen's egg; projecting slightly in floor of mouth. *Operation.*—Removed by dissection. Situated beneath platysma and mylohyoid muscles in submaxillary glands. Contents of cyst immense number of minute yellow bodies like fig-seeds floating in thick mucous fluid. Discharged cured on 12th day after operation.

Of breast.—Female, æt. 37. Hereditary history of cancer on father's side; 2 years' occasional pain; 2 weeks noticed swelling in breast. *Operation.*—Small cyst, size of walnut, deep in substance of breast; greenish fluid; healed without complication. Discharged cured 8th day after operation.

Hydatid cysts—

Of neck.—Males 2. C. 2. Æt. 22 and 26. Six months' and 12 months' duration. Removed by dissection.

Of transverse mesocolon.—Male, æt. 47. Fall 2 years ago. Struck in abdomen by plank; "ill" for 2 months afterwards, pain, vomiting, &c. Small lump noticed in abdomen 18 months; increasing in size, painful; situated just below and to right of umbilicus. Abdominal section; removed; healing without complication. Discharged cured 29th day.

Simple tumours—

"*Nævoid.*"—Female, æt. 29. Cured. Small tumour over left scapula; 22 years' duration; redness of skin over it at first; slow increase of size till recent years; no pain. *Operation.*—Removed. Reticular structure of delicate fibrous

tissue and fat in subcutaneous tissue (? resulting from degenerated nævus or or cystic hygroma).

Papilloma of hand.—Male, æt. 15. Commenced in scar left by removal of nævus on back of hand 3 years ago. On admission a papillomatous condition of skin with irregular patches of recurrence of nævus. Treated by salicylic acid in collodion; relieved.

Submaxillary tumour.—Females 2, æt. 16 and 35. C. 2. Duration 9 and 2 years respectively before admission. Firm, rounded, elastic tumour in submaxillary region in front of stylo-maxillary ligament. Excision; not attached to jaw; encapsuled; structure "chondro-myxoadenoma," resembling the parotid tumour.

Fibroma of abdominal wall.—Female, æt. 24. Cured. Two years' history. *Operation.*—Growth attached to sheath of rectus abdominis and aponeurosic expansion of internal oblique and transversalis; no connection with round ligament. *Microscopical examination.*—Simple fibroma.

Of thigh.—Male, æt. 32. Cured. Only noticed 9 days. Large tumour, size of orange, in upper part of abductor region. *Operation.*—Solid growth attached to periosteum of pelvis and femur, bulging towards surface between pectineus and adductor longus in front and adductor magnum behind. Some appearance of encapsulation, but muscle-sheaths closely adherent to growth at most joints. Removal of growth by division of muscles lying over it. Some trouble from retention and suppuration of discharge among intermuscular planes, necessitating secondary incision for drainage during healing of wound, which, however, healed eventually. Patient discharged cured on 91st day after operation.

Of uterus.—Female, æt. 31. Large, diffuse fibroma of uterus, 5 years' duration; treated by Apostoli's method; 3 applications, September 7th and 15th and October 6th; positive pole introduced into uterus on first occasion, negative on second and third, ten minutes on each occasion. First occasion 10 cells current, 30·8 ampères; resistance 180 ohms. Second occasion 12—14 cells, average current 175 ampères; resistance 130 ohms. Third occasion 16 cells, current 120—150 ampères; resistance 110 ohms. On discharge very slight diminution in size of tumour (from ½ to 1½ in. in circumferential measurement). No constitutional symptoms; 1 menstrual period between second and third applications, in no way differing from usual periods.

CIRCULATORY SYSTEM.

Circumscribed aneurysm.—Males 4. C. 4. All popliteal.

1. Æt. 30. Professional runner (100 yards) when about 20; enlisted at 21 in cavalry regiment, served in Egypt; contracted dysentery and venereal disease. No constitutional sign of syphilis. Two years before admission right leg injured by fall from horse; left army, and some months later entered police force. Three weeks before admission slipped off kerb and felt sharp pain in knee; remained on duty; used liniment, &c., to knee. Small, throbbing swelling gradually formed; 9 days before admission saw medical man; recommended to hospital; rested 9

days without relief. Admitted with large aneurysm in popliteal space and effusion into knee-joint; feeble pulsation in tibial arteries below; œdema of foot and ankle. Ligature of femoral on 5th day at apex of Scarpa's triangle with No. 4 silk without rupture of coats of artery; no complications. Discharged on 81st day; no pulsation in and much diminution in size of aneurysm; collateral circulation good; 3 anastomotic vessels felt passing over aneurysm.

2. Æt. 40. Twelve years in Coldstream Guards. "Drank a good deal." History of venereal disease. No constitutional signs of syphilis. Discharged from army 7 years before admission, occupation horse-keeper since; one year before admission had Pott's fracture of right leg; small swelling noticed soon after in popliteal space; caused no trouble till five weeks before admission, when it began to increase and cause pain. On admission large aneurysm in right popliteal space. Slight œdema of leg below. Superficial femoral artery ligatured on 7th day with No. 4 silk; coats not ruptured; no complication. Discharged cured on 41st day; anastomotic vessel at inner side of patella.

3. Æt. 44, a farrier. No history of syphilis. Pain and swelling 3 weeks, commenced after 3 days' hard work at shoeing horses; was able to work up to day before admission. On admission, large aneurysm filling left popliteal space; œdema of leg below; feeble pulsation in tibials; flexion of leg 7 days. On 7th day Esmarch's bandage from foot to middle of thigh missing aneurysm for 1 hour, followed by digital compression for 13 hours; little change in aneurysm, but increased œdema and effusion into knee-joint. No active treatment for 7 days; then Watson's weight compressor applied for 10 hours, followed by flexion and elevation of limb; pulsation less expansile and some sign of clot formation in aneurysm, but no reduction in size. Seventeen days after weight compression superficial femoral artery ligatured with stout silk; tightened until pulsation ceased, reef knot. Wound healed well, but return of pulsation in aneurysm noticed on day after operation. Eighteen days later wound reopened; portion of artery, including point of ligature, excised after ligature of trunk above and below with thick catgut; no complication. Discharged cured without return of pulsation on 64th day after second operation.

4. Æt. 30, bat maker. No history of syphilis. Pain in knee 3 months; swelling and stiffness 2 weeks. On admission, aneurysm size of small orange in popliteal space (left), much œdema below; very faint pulsation in tibials; tissues around aneurysm tender and inflamed, especially on outer side. Ligature of superficial femoral on 16th day; kangaroo tendon surgical knot; a few whitish spots seen on artery at point of ligature, but otherwise it appeared healthy. Wound healed by 9th day. Attempts to straighten the limb, which was much flexed at knee-joint, caused very severe pain, and the foot became very tender and remained so for about 2 weeks, when the pain subsided. On 18th day, on removal of wool dressing, 2 ulcers on outer side of foot, not at points of pressure; and for the next 2 or 3 weeks a succession of circular ulcers of various sizes appeared, chiefly in distribution of musculo-cutaneous nerve, and the foot became completely anæsthetic on the dorsum. During this period a plaster of Paris and iron splint was applied to secure gradual extension at knee-joint, but was soon discontinued, as it caused pressure sores. On account of gradual failure in health of patient without improvement in local condition, amputation in upper third of leg performed on 28th day after ligature. The stump healed well except for the

formation of a crop of small ulcers over region supplied by branches of external popliteal nerve. Discharged cured on 153rd day after ligature of femoral.

Diffuse popliteal aneurysm.—Male, æt. 28. Cured. No history of syphilis or previous disease. Five weeks before admission slipped off last rung of ladder and strained left knee. Some swelling of leg appeared; worked for a few days, but swelling increased and limb became very painful; admitted with large tense swelling of leg fluctuating on inner side. Incision followed by gush of arterial blood. Esmarch tourniquet applied above knee; large cavity filled with clot explored, found to extend from popliteal space to lower third of leg. Longitudinal rent in posterior tibial artery found; ligature applied above to lower end of popliteal artery, anterior tibial artery and posterior tibial below the rent also ligatured; intervening portion of arteries excised. Wound washed out with chloride of zinc solution and sutured; some temporary œdema and coldness of limb after operation. Some sloughing of deep tissues occurred, sloughs coming away through wound, which otherwise did well till 84th day, when erysipelas developed. Effusion into knee-joint without much tenderness or redness. Thin purulent fluid drawn off by aspirator; no reaccumulation. Wound gradually healed with occasional interruption, due to breaking down of the new-formed cicatricial tissue and the formation of a pressure-sore on the heel. Knee-joint at first stiff after subsidence of inflammation, but fair mobility obtained after rupture of adhesions by forcible flexion. Patient discharged cured on 304th day after admission. Case shown at Clin. Soc., May, 1889.

Recurrent pulsation.—Male, æt. 27. Treated for popliteal aneurysm of right leg 13 months previous to admission (see "Surgical Report," 1887), cured by ligature of superficial femoral, readmitted with recurrent pulsation of pain in site of cured aneurysm, which had been noticed only a few days before applying for readmission. All symptoms disappeared with simple rest in flexed position for 25 days.

Varicose veins of abdomen.—Male, æt. 31. Cured. Scarlatina at 13, followed after a few months by enlargement of abdominal veins. First operation (phlebectomy) at 16; recurrence, and second operation at 19. After this no recurrence till age of 27, four years before present admission. On examination varicosity of superficial veins in hypogastric region extending to umbilicus. Operation on 13th day. Veins excised. Some suppuration of wound. Rigor, temp. 102·6°, with vomiting, headache, &c., on 21st day after operation, followed by œdema of right leg and thigh, lasting about 3 weeks. No further complication. Left hospital cured on 87th day.

Thrombosis.—Females 5. Cured 3. Ages 23, 46, and 50. Internal saphenous vein in all (in 2 portion below knee alone affected); right leg 2, left 1.

Fatal case.—Æt. 24. Anæmic and ailing since childbirth, 3 years before admission. General servant, having laborious work. Œdema and aching in right leg 10 days, spreading up to thigh. On admission œdema of right leg from foot to groin; no local sign of thrombosis; systolic mitral murmur at apex; cardiac action irregular and intermittent; temp. 101·2°. Swelling of leg subsided, but temperature rose to 102°—103° till 5th day, from which it slowly subsided to 99°—100°; delirium, especially at night, with delusions; motions

passed unconsciously. Slight improvement under bromide, &c., till 11th day, when death occurred with some symptoms of dyspnœa, the sensation of which had been complained of for several days, though unaccompanied by objective signs. P.M.—Clot in femoral vein extending upwards through iliac vein for 1 inch into inferior vena cava, partially occluding left common iliac. Extensive ante-mortem clotting in medium-sized and small branches of both pulmonary arteries; no definite embolism; viscera healthy, but pale.

DUCTLESS GLANDS.

Enlarged thyroid gland.—Males 3, females 6. C. 6, R. 1, U. 2. Partial excision. Hereditary in none.

1. Male, æt. 19, native of Witley. Two years' history of growth. Occasional palpitation and wheezing respiration on exertion. Median vertical incision, division of isthmus, and removal of median portion after ligature. Wound packed with iodoform gauze plugs; some respiratory difficulty relieved by removal of plugs on 3rd day; no further complication. Discharged on 53rd day after operation. Slight dyspnœa on exertion; wound not quite healed; thyroid smaller and softer.

2. Female, æt. 19. Always lived in London. General servant. Anæmic; symptoms 1 year; elastic swelling in mesial portion of thyroid rather to left of mid-line; median incision; enlarged portion, which proved to be cystic, excised chiefly by blunt dissection; healing without complication. Discharged cured on 25th day after operation.

3. Female, æt. 43, native of Streatham. Six years' history. Lobular swelling in median portion of thyroid to left of mid-line. Median incision; swelling proved to be a cyst containing dark brown fluid; dissected out; wound completely healed without complication by 9th day, and patient discharged cured on 14th day after operation.

4. Female, æt. 24, native of Devonshire. Fourteen years' history of swelling; stationary for 4 years; no symptoms; globular swelling slightly to right of mid-line; excised after transfixion and ligature of its base of attachment. Ligatures came away on 22nd and 33rd day after operation through small sinus; wound otherwise healed without complication. Discharged cured on 35th day after operation.

Removal of recurrent growth.—Female, æt. 34. Enlargement of thyroid with usual symptoms commenced at age of 12 years. Gland excised in 1883 (æt. 28) without opening capsule. A small accessory thyroid on right side not removed; complete relief for 3 years, after which period slowly growing swelling on right side noticed; headache, interference with voice (probably due to effects of cicatricial contraction) 6 months; angular incision; growth (hypertrophied thyroid tissue) excised. Wound healed without complication. Discharged cured on 13th day after operation.

Tapping and injection of iodine.—1. Male, æt. 49, native of Teddington.

Blow over thyroid 7 months; swelling noticed 5 months; cyst in median portion of thyroid tapped and injected with iodine (allowed to drain out). Discharged cured on 8th day after operation.

2. Female, æt. 58, native of Stroud. Twelve months' swelling, dyspnœa, dysphagia, cough, &c. Cystic swelling in mid-line tapped and injected with iodine; cyst refilled by hæmorrhage and formed a firm solid tumour. Discharged relieved (for readmission) on 22nd day after operation.

Exophthalmic goitre.—Male, æt. 52. Eighteen months' palpitation and exophthalmos; 2 months' enlargement of thyroid. Transferred at request to Ophthalmic Department.

One case, female, æt. 41, native of Devonshire, acute bronchocele commencing after parturition 4½ months before admission, was discharged at her own request without treatment.

RESPIRATORY SYSTEM.

Empyema.—Males 3. C. 1, D. 2.

1. Æt. 8. Treated in medical ward by incision and drainage; 5 months previously discharged apparently cured; discharge commenced 3 weeks before 2nd admission. Excision of 2 inches of rib; 15 oz. sanious pus evacuated, Discharged cured on 22nd day after operation.

Fatal cases.

1. Male, æt. 8. History of injury 2 weeks before admission. On admission empyema pointing in axilla; 4 aspirations; incision; death on 3rd day.

2. Male, æt. 32. Left pleurisy 2 years before admission; 2nd attack 11 months before; febrile symptoms 9 months before; chest aspirated; 2 quarts of pus drawn off; 2nd aspiration 3 weeks later, pus (smaller quantity) again drawn off; 2 weeks later excision of portion of 9th rib (left); temporary relief, but discharge never ceased entirely, and became offensive a few weeks before admission. On admission discharging sinus; 9th space; drainage-tube inserted; discharge diminished in quantity, and became less offensive for some weeks, but then increased again, and on 53rd day portions of 6th, 8th, and 9th ribs removed. Temporary relief; 2½ months later Eslander's operation performed; temporary relief, followed by gradual sinking from exhaustion. Death on 40th day after 2nd operation. P.M.—Left lung shrunken and almost airless; adherent except laterally (corresponding to position of empyema); right lung healthy; no sign of tubercle or lardaceous disease.

Laryngitis.—Female, æt. 23. Old syphilitic laryngitis (5 years); stricture 6 months; tracheotomy 5 months before admission. O'Dwyer's intubation tubes inserted at intervals of 3 or 4 days, left in about 12 hours on each occasion; dyspnœa much relieved. Discharged on 50th day after 1st intubation for continuance of treatment outside hospital.

DIGESTIVE SYSTEM.

Hernia.—(See Special Table.)

Intussusception.—Male, æt. 4 months. Fatal. Symptoms 2 days; vomiting and signs of severe abdominal pain; 3 evacuations 2 days ago; nothing passed since but small quantities of blood and mucus. On admission sausage-shaped tumour in abdomen from left of umbilicus towards pelvis; projecting mass felt per rectum, just reached by examining finger under chloroform; inflation and manipulation caused apparent reduction of intussusception, which recurred in 3 or 4 hours. Abdominal section; median incision; reduction effected by manipulation up to last inch, which resisted all efforts, and rupture of peritoneal covering of invaginated portion and of wall of external ensheathing portion occurred; excision of damaged portion; artificial anus formed. Death 2½ hours later. P.M.—Large blood clot in peritoneum; no peritonitis.

Obstruction of common bile duct.

Cholecystotomy.—Fatal. Male, æt. 21. Signs of obstructive jaundice since illness 6 months before admission. Smooth rounded tumour attached to liver in right hypochondrium; median incision above umbilicus 4 inches; gall-bladder found distended; abdominal incision enlarged by transverse extension to right; gall-bladder exposed, tapped; thick brownish fluid, then incised; gall-stones removed with much hard deposit around walls; removed by scooping with spoon, forceps, and syringing; sponges packed around to prevent leakage into abdominal cavity; wall of gall-bladder sutured to parietal peritoneum; drainage-tube into bladder. Death from shock 24 hours after operation. No P.M.

Fatal case.

Stricture of rectum.—Female, æt. 44, married, 4 children living, 2 stillborn at term, 6 miscarriages. Symptoms of alternating diarrhœa and constipation 17 years. Six months before admission treated with rectal bougies with temporary relief. On 3rd day a rigor, followed by febrile symptoms without obvious organic disease, and death on 4th day from admission. P.M.—Extensive ulceration of rectum from just within anus to 5½ inches up, showing partial cicatrisation; 2 sinuses leading through wall of rectum into pus-containing cavities; slight atheroma of larger vessels; no obvious organic disease to account for death.

GENITO-URINARY SYSTEM.

Castration.—1. Æt. 36. Twenty years ago Syme's amputation for disease of ankle; 3 years ago left testis removed; Pott's curvature in upper dorsal region; right testis 3 times normal size; sinus on outer side; inguinal glands enlarged; no pain; testis excised; tunica vaginalis adherent and dissected up; cord not affected; vessels and vas ligatured separately; wound healed on 5th day. Discharged cured on 15th day after operation.

2. Æt. 22. History of hereditary syphilis. Previous "hernia' of left testis, completely healed on admission; hernia of right testis as large as duck's

egg; vas deferens thickened; fungating mass removed; vessels of cord and vas ligatured separately; disease probably syphilitic.

Hydrocele.—Males 12. C. 11, R. 1. Male, æt. 42. Encysted of epididymis; 6 oz. opalescent fluid withdrawn; ʒj of glycerine, of carbolic acid gr. xxx ad oz. injected; 11 of tunica vaginalis; 2 treated by simple tapping; 1 complicating syphilitic orchitis (discharged relieved); 4 by tapping and injection (all with glycerine and carbolic acid); 4 by incision; of these in 3 the sac was sutured to the skin, 1 being followed by cellulitis; in 1 the fluid re-collected after incision, finally cured by injection of Tr. Iodi; 1 treated by excision of portion of sac.

Tubercle of breast.—Female, æt. 21. Six years' history; lump in breast near nipple; gland in axilla 12 months. At operation caseating tubercular nodules in breast with some calcareous deposit and tubercular glands in axilla removed. Discharged cured 17th day after operation (see 'Lancet,' vol. i, 1889).

Urethral stricture.—Males 33. C. 21, R. 1, U. 1, D. 4. Traumatic 1; after gonorrhœa 29; not stated 3. Perineal abscess 1; cystitis 7; urethritis 4; epididymitis 2; renal disease 2; retention (during treatment) 2; extravasation (during treatment) 2; suppression 2 (fatal); partial suppression (cured) 1; uræmia 1; pyæmia 1; syphilitic periostitis 2; incontinence 4; hydrocele 1 (treated by tapping); false passage (existing before admission) 3; multiple stricture 2; old internal urethrotomy 1. *Treatment.*—Interrupted catheterisation 20; continuous catheterisation 8; Holt's dilatation 1; external urethrotomy 2; internal urethrotomy 1; 1 discharged at request before treatment commenced. Left passing No. 7, 1; No. 8, 7; No. 9, 1; No. 10, 5; No. 11, 4; No. 12 or larger, 8; not stated, 6.

Fatal cases.

1. Æt. 59. Gonorrhœa 30 years; internal urethrotomy 29 years ago; dilatation 23 years; used a catheter till 4 years ago; since then increasing difficulty. Rigor 2 days before admission. Catheter passed. Rigor, followed by suppression; dry cupping to loins. Death on 5th day from admission. P.M.—Acute congestion of bladder; no sign of surgical kidney; ulcer in anterior wall of stomach.

2. Æt. 50. Gonorrhœa 30 years; stricture 20 years. Treated for retention at St. Mary's Hospital 17 years before admission. Urine albumen one quarter pus. Stricture admitting No. 1. Nos. 9 and 10 passed under anæsthetic on 34th day. Bladder washed out; catheterisation. Rigor on 8th day after. Death on 12th day from pyæmia.

3. Æt. 50. Gonorrhœa 15 years, followed by gleet. Dilatation of stricture 5 years ago; temporary relief. Abdominal pains and increasing dysuria one month. Admitted with suppression. Dry cupping, hot air baths, pilocarpine, digitalis fomentations. Partial relief to symptoms, but death on 3rd day. P.M.—Stricture; prostatic calculi; hypertrophy of bladder; suppurative pyelitis and nephritis.

4. Æt. 44. Gonorrhœa 20 years; stricture 3 years. Febrile symptoms for 3 days before admission. Since attempted passage of catheter. Temp. 101·3°. Dysuria; pus and blood in urine. Eighth day after admission signs of extrava-

sation of urine. Incisions, preprostatic puncture of urethra. Death from exhaustion 4 days after operation.

Perinæal abscess.—Fatal case. Male, æt. 51. Eight weeks' urethral discharge, commencing 2 days after coitus. Redness and swelling in perinæum 2 weeks later; gradual extension. On admission cellulitis of perinæum and buttocks; retention of urine; perinæal abscess. Temp. 102·6°. Urine drawn by catheter; perinæal incision; sloughy abscess cavity. Death 15 hours after admission. P.M., 29 hours after death.—Organs much decomposed; acute urethritis; sloughing cellulitis of perinæum.

Retention of urine.—Males 10. C. 8, R. 1, D. 1. Six due to stricture; acute symptoms traced to effects of alcohol in 2. One treated by perinæal incision, followed by catheters; rest by catheters after bath and morphia suppository. Four due to enlarged prostate (æt. 70, 70, 79, and 80). Three treated by catheterisation (silver No. 12 prostatic 2; No. 8 flexible 1). Irrigation of bladder 2. One (fatal case), æt. 70, treated by supra-pubic cystotomy; death on 24th day from acute septic cystitis and uræmia; no P.M. Previous attacks of retention in 4.

Extravasation of urine.—Males 2. C. 1, D. 1.

1. Æt. 55. No history of stricture. One day before admission at work, laying down flooring, stamping on the boards to fix them. No pain or other symptom till next day, when pain and swelling in perinæum and scrotum noticed. On admission signs of extravasation. Temp. 100°. Median perinæal incision into sloughy cavity; urethra opened; director passed into bladder through wound. Catheter passed through penis and into bladder along director, and left in 17 days. Wound healed well. All urine passed per urethram on withdrawal of catheter. Discharged cured, passing No. 7 catheter himself, on 36th day.

2. *Fatal case.* Male, æt. 57. Stricture 12 months. Retention 6 months before admission; treated at Charing Cross Hospital. Signs of returning stricture 6 weeks; swelling and pain in perinæum 1 month; acute symptoms 10 days; dribbling incontinence. On admission extensive signs of extravasation and sloughing of subcutaneous tissues. Free incisions; catheter passed into bladder. Transferred for erysipelas on 4th day, and death from toxæmia on 11th day after operation. P.M.—Extensive sloughing of penis, scrotum, and perinæal tissue; fasciculated bladder, acute on chronic cystitis; cartilaginous stricture in bulb, behind which urethra dilated and lined with phosphatic concretion; kidneys and other viscera healthy.

Enlarged prostate and cystitis.—Males 6. R. 6. Æt. 45, 65, 72, 74, 77, and 79. All relieved by rest and catheterisation. Boracic irrigation in 4.

Renal calculus.—Male 1, female 1. C. 1, D. 1.

1. Female, æt. 18. Readmission. Pain 3½ years; swelling 9 months. Eight months ago admitted with hydronephrosis. Incised and drained. Since then pus in urine, and continuance of symptoms. Right kidney excised; calculus in ureter near commencement; kidney substance almost entirely destroyed. Ligature of ureter and vessels by separate ligature. Sutures removed on 8th day; drainage-tube on 31st. Discharged cured on 43rd day after operation.

2. *Fatal case.*—Male, æt. 33. Fall, injury to left side 5 months before admis-

sion. Pain 2 months; swelling in side 1 month; incised, pus. On admission lumbar swelling and sinus in direction of left kidney, 3 inches. On 2nd day, exploration of sinus; twelfth rib found bare. On 8th day nephrolithotomy through old sinus; five irregular calculi occupying pelvis and calices of kidney, and fever with rigors after operation; and on 7th day fæcal matter in discharge from wound. Death from pneumonia and exhaustion on 39th day after operation. P.M.—Renal calculi in dilated pelvis and calices of left kidney; much induration around perinephritic abscess, communicating with colon; right kidney slightly hypertrophied; gangrenous pneumonia, right lung posteriorly.

Vesical calculus.—Males 12, female 1. C. 10, R. 1, U. 1, D. 1. Urates 3; urates with oxalic nucleus 1; phosphates with uric acid nucleus 1; composition not stated 8. *Treatment.*—Lateral lithotomy 3; lithotrity 6; supra-pubic 2; refused operation 2.

Female, æt. 45. Urethra dilated, but stone found too large to remove. Crushed with lithotrite, and large fragments removed with forceps. Bladder washed out afterwards.

Fatal case.—Male, æt. 50. Leiter's cystoscope used; calculus distinctly seen. Lateral lithotomy; hæmorrhage from transversus perinei. Urethra much elongated; bladder at depth of 5—6 inches; five flat, smooth, non-faceted stones; uric acid with oxalic nuclei. Catheter tied into bladder. Died next day. Temp. 100°—103°. P.M.—Suppurative nephritis.

Suprapubic lithotomy.—2 cases.

Male, æt. 7. Bladder washed out with Acid. Carbol. (1—40), and about six ounces injected. Rectal bag with four ounces fluid; 2½ inch incision. Stone removed with scoop. Bladder closed with Lembert's sutures, one eighth of an inch apart. Drainage-tube through muscles, which were joined by three sutures; also small tube between skin and muscles. Dressed with iodoform and salicylic wool. Healed by granulation, stitches in skin and muscles giving way. Some urine escaped from wound until 11th day. Recovery hindered by slight attack of pneumonia.

Male, æt. 41. Lithotrity attempted, but given up owing to difficulty in seizing stone. Bladder distended with fifteen ounces water, and bag placed in rectum. Four-inch incision; much superficial fat. Stone found encysted in right antero-superior part of bladder. Attempt made to suture bladder, but stitches would not hold. Drainage-tube inserted, and upper part of wound closed. Dressings of wood wool, frequently changed. All urine escaped through wound for 8 days; urine ceased to escape on 28th day. Wound frequently blocked by phosphatic concretions.

Urethral calculus.—Males 4. C. 4. Three impacted (ages 3, 5 and 6). All removed by perineal incision after attempts at extraction per urethram, one afterwards developed scarlatina. One case of 38, small oxalate calculus impacted in prostatic portion of urethra passed spontaneously after passage of sound; only partial relief to symptoms and grating sensation on introduction of sound. Median lithotomy 5 days after spontaneous expulsion; pouch found in prostatic urethra containing sabulous deposit but no calculus.

Hydronephrosis.—Male 1. Unrelieved. Admitted twice, first after being

run over, hydronephrosis developing during residence, treated by aspiration (see injuries to abdomen).

Pyonephrosis.—Male 1, females 2. C. 1, R. 2.

1. Female, æt. 52. Three months' symptoms of renal colic (not severe); small quantity of pus in urine; swelling in left renal region; aspirated; thick pus, not offensive, 10 oz. No sign of reaccumulation by 32nd day after aspiration; discharged cured.

2 and 3. Male, æt. 36, and female, æt. 24. Symptoms 4 and 5 months respectively. No cause of origin discovered. Lumbar incision and drainage in both; no calculus found. Both discharged with minute sinus on 24th and 19th day after operation relieved.

LOCOMOTORY SYSTEM.

Diseases of Joints.

Arthritis of hip.—Males 31, females 24. C. 15, R. 34, U. 2, D. 4. Family history of phthisis in 12; symptoms dating from injury in 13; rheumatism 1; existing phthisis in 2 (fatal); more than one form of disease in 10 cases; strumous cervical glands 2; strumous cervical dactylitis 1; of ankle 1; of ilium 1; of lumbar spine 1; tubercular meningitis 1; disseminated tuberculosis 2; disease of both hips 1; 7 readmissions; admitted with discharging sinuses 7; 2 old excision cases; admitted with abscess 8; ankylosis 4; pathological dislocation 4. In 14 cases of operation the disease appeared to have commenced in the femur in 11 (in 2 at epiphysial line); in the synovial membrane in 1; in the acetabulum in 2 (both discharged relieved). In 2 cases disease appeared to commence as abscess in soft parts, subsequently extending into the joint. In 2 probably commenced in region of great trochanter and extended to joint. *Duration before admission.*—Under 2 months 6 (10 days, 4, 6, 6, 6, and 7 weeks); under 4 months 7 (in 5 two months, in 2 three months). *Treatment.*—Leather splint 1; plaster of Paris splint 4; plaster of Paris splint with extension 4; long outside and extension 3; Thomas splint 1; Thomas splint and extension 12; simple incision of abscess in 9 of above cases (C. 4, R. 4, D. 1); incision and scraping in 3 (C. 2, R. 1); excision 13, in 3 preceded by incision of abscess; 1 double excision (cured). In 3 excision followed by amputation at hip-joint (R. 1, D. 2). In 5 cases in which microscopical examination was made of affected structures typical tubercle was found. *Complications.*—Empyema and pyæmia 1; enlarged liver 1 (relieved); albuminuria 3; 3 transferred for erysipelas; carboluria after excision 2; 1 for measles (said to have had previous attack); diphtheria and tracheotomy 1 (cured); scarlatina 2; meningitis 1 (died in medical ward); bedsore 1; pleurisy with effusion and catarrhal jaundice 1 (fatal).

Fatal cases.

1. Male, æt. 22. Family and previous history good; doubtful injury 16 months before admission followed by pain and lameness 3 weeks; no further symptoms till 7 months before admission. On admission, pain, deep fluctuation below trochanter. Incision on 10th day; abscess, small, communication with joint.

Excision 28 days later, carious acetabulum scraped. Several abscesses incised at intervals, and 2 months after excision amputation at hip-joint (Furneaux Jordan's operation), much shock; 20 oz. pus in pleura aspirated 22nd day after amputation; death 10 days later from exhaustion, temperature having ranged from 100° to 103° ever since amputation; no rigors. P.M.—Pleurisy with effusion; peritonitis; ulcerative endocarditis; impacts in spleen (not suppurating); caseous tubercle in lungs.

2. Male, æt. 12. No family history of phthisis; no previous illness of importance. Symptoms 8 months before admission; no trauma. Treated with extension at 2 other hospitals. Admitted with signs of disease in second stage; double Thomas splint and extension; 3 months after admission abscess in front of great trochanter incised; carious trochanter trephined; antiseptics not successful; much discharge. Two months later excision of head of femur; discharge continued; general condition becoming worse; amputation at hip-joint 9 months after excision with good result and temporary improvement in health. Six weeks after amputation iliac intra-pelvic abscess discovered opening through acetabulum, and 2 weeks later arthrectomy for disease of right elbow-joint performed. From this time till death (6 months later) condition variable; 2 exploratory operations for removal of carious bone from femur. One month before death symptoms of lardaceous disease supervened, and the patient gradually sank from exhaustion. P.M.—Osseous ankylosis of elbow, but active caries present in bones; extensive caries of left side of pelvis; caseous tubercle at both orifices of lungs; miliary tubercles in liver, spleen, and kidneys; extensive lardaceous disease in same organs, also in intestine and thyroid gland.

3. Female, æt. 15. Family and previous history good. Fall 2 weeks before. On 1st admission signs of disease of right hip, 2nd stage; treated with splint. Discharged relieved.

Readmitted 5 months from commencement of illness; abscess in adductor region; opened spontaneously; antiseptic dressings; 1 month later exploration of joint; abscess opened; cartilage unaffected, but superficial caries of neck of femur; suppuration of wounds, and eczematous condition of wound due to irritation of mercurial dressings, but otherwise no complication relating to local condition; 2 severe attacks of abdominal pain, with constipation and bilious vomiting, after 2nd of which patient was left much exhausted and died. P.M.—Tubercular caries of femur and acetabulum; tubercles in lungs, liver, and spleen; signs of collapse of intestine about 2 feet above ilio-cæcal valve; distention of bowel above; no definite sign of any cause of strangulation or constriction; a few small ulcers in mucous membrane of ileum, some showing sign of tubercle.

Knee-joint arthritis.—Males 14, females 16. C. 13, R. 12, U. 2, D. 3. Right knee 14, left 13, not stated 3; history of trauma 3; family history of phthisis 10; active phthisis present in 2 (of non-fatal cases); evidence of tubercular disease of joint in 15; in 2 typical tubercular structure found on microscopical examination; 1 probably gummatous; 1 doubtful, possibly very early tubercle; commencement of disease probably synovial 4; in bones 8; in the rest not ascertained. *Treatment.*—Extension 1 (R.); incision and drainage 1 (R.); MacIntyre splint 1 (R.); plaster-of-Paris splint 11 (C. 2, R. 8; 1 death from tubercular meningitis). Arthrectomy (erasion) 3, one followed by amputation of

thigh 1 month later, cured; 1 relieved; 1, æt. 12, died 12 hours after operation from shock. Excision 3, all cured; suture of bones with tendon in 1. Amputation of thigh 10 (C. 7, R. 1, D. 1; 1 discharged unrelieved with albuminuria after scarlatina and phthisis); in fatal case death from phthisis 6 weeks after amputation.

Ankle-joint arthritis.—Males 7, females 2. Right ankle 6, left 1, both 1, not stated 1; history of trauma 2 (1 dislocation). Family history of phthisis 2. *Treatment.*—Plaster of Paris splint 2 (1 with Scott's dressing), both relieved; incision and drainage 1 (relieved); arthrectomy (erosion) 1, developed scarlatina and nephritis, discharged relieved. Excision 1, discharged cured after measles. Amputation 3 ("Syme's" 1, upper one third of leg 2), all discharged cured. In case with disease of both ankles, Syme's amputation of right foot, incision and drainage of left. Discharged relieved.

Shoulder-joint.—Tubercular arthritis, male, æt. 26. Doubtful history of phthisis in family. Incision of abscess followed by excision of shoulder-joint; necrotic caries of acetabulum; caries of head of humerus; typical tubercle on microscopical examination. Discharged cured with fair movement in joint on 59th day after operation.

Elbow-joint.—Males 2, females 2. Arthritis, probably tubercular, in all; microscopic examination in 1 showed typical tubercle. *Treatment.*—Arthrectomy 2, one cured; 1, æt. 9 months, died of broncho-pneumonia; plaster of Paris splint 2; both relieved.

Wrist.—Males 2. Tubercular arthritis; active phthisis in 1, and microscopical examination of tissue removed at amputation showed typical tubercle and bacilli. *Treatment.*—Incision and scraping 1; amputation 1; both relieved.

SUMMARY OF INJURIES.

GENERAL INJURIES.

Burns.—Males 28, females 21. C. 26, R. 4, D. 19.

Causes.—Ignited clothes 21; falls into fire 7; explosion of lamp 11; of fire-works 2; melted gun-metal 1; house on fire 1; not stated 6.

Fatal cases.—From collapse 12. Æt. 1, 2, 3, 3, 4, 4, 5, 5, 13, 18, 19, 28. Of these 7 died within 24 hours of admission, 3 within 48 hours, and 1 on 5th day. From exhaustion 6. Æt. 1, 1½, 2, 9, 13, 32. Duration of residence 10, 11, 13, 16, 19, and 22 days. From suppression of urine 1. Female, æt. 20, burn of arms, neck, and trunk. Sore-throat on day of admission; 4th day, erythematous blush on shoulders; 5th day, vomiting, rash spreading downwards; 9th day, death from suppression in spite of dry cupping, fomentations to loins, &c.

Scalds.—Males 16, females 26. C. 30, D. 12.

Causes.—Boiling water 23; tea 7; coffee 1; cocoa 1; broth 4; gruel 2; tar 1; sucking at spout of kettle 2; not stated 1.

Fatal cases.—From collapse 7. Æt. 1, 1½, 2, 2, 3, 3, 4. Four died on day of admission, 2 on 2nd day, 1 on 3rd. From exhaustion 3. Æt. 1, 1½, and 7. Death on 6th, 9th, and 24th day. One from scarlatina, æt. 1 year. Death on 4th day. One from nasal diphtheria. Death on 53rd day in convulsions.

No post-mortem examination of any burns or scalds (hospital regulation).

LOCAL INJURIES.

Scalp wounds.—Males 41, females 10. C. 47, R. 3, D. 1. Division of temporal artery 2; 1 fatal case from delirium tremens on 4th day. P.M.—No fracture; organs all healthy, except for slight dilatation of smaller cortical vessels of brain, with slight excess of subarachnoid fluid.

Concussion.—Males 86, females 28. C. 111, R. 2, D. 1.

Complications.—Dislocation of clavicle, sternal end upwards, 1; fracture of clavicle near centre 2; fracture of humerus, surgical neck, 1 (treated by (1) Stromeyer's cushion, (2) plaster of Paris splints); fracture of radius 1; rib 1;

orbital ecchymosis, partly subconjunctival; 3 without other sign of fracture; epistaxis 3.

Cerebral irritation in 4 cases. Æt. 10, 17, 29, and 32. Lasting about 10 hours in all; 1 continued drowsy with irregular temperature (98°—103°) for 15 days. In the rest temperature 100° on 2nd day, afterwards normal. Ophthalmoscopic examination negative in all. Of 15 cases examined, including the above, signs of optic neuritis only formed in 1, a case with extensive hæmatoma in right temporo-parietal region. On 9th day discs hazy and swollen; vessels dilated; no cerebral symptoms present; no interference with vision.

Selected cases.

1. Male, æt. 11. Kicked on side of head by mule. Unconscious for some minutes; semi-conscious on admission. Wound of right ear and adjacent scalp; bleeding from auditory meatus, apparently from external wound; respiration slow and laboured; eyes turned to left. A few hours after admission a convulsion with general rigidity of limbs, followed by paresis of right arm; drowsy, answering questions in monosyllables, and only after being roused, for 6 days. Discharged cured on 25th day; slight weakness of right arm, otherwise well.

2. Male, æt. 4, fell about 6 feet on to fender. Conscious for short time after accident, then became rapidly drowsy, and was unconscious on admission to hospital 2 hours after accident. Body warm; pupils active to light and equal; hæmatoma below left parietal eminence. A few minutes after admission 4 fits of unilateral convulsions, commencing in right arm, spreading to right leg and right side of face; eyes and head strongly turned to right, with dilatation of left pupil; vomiting during the attacks. In intervals paralysis of right arm and leg noticed; eyes turned to left, and on ophthalmoscopic examination vessels of fundus larger on left than right side; partial recovery of consciousness after the fits. Parents refused consent for operation. Head shaved; ice-bag applied. Next day recognised his friends and answered questions, being able to give account of accident; occasional twitchings in right arm, with evident paresis. Recovery without complication, though it was noticed that he used his left hand in preference to right on all occasions, though not previously left-handed. During residence in hospital temperature ranged between 96° and 99° for 7 days, afterwards normal. Discharged cured on 23rd day.

3. *Fatal case.*—Female, æt. 2. Admitted with concussion after blow on right eyebrow with contusion; no serious symptoms; discharged apparently cured on 5th day. Readmitted after 2 days with abscess over right eyebrow; abscess incised, non-offensive pus; half an hour later a rigor, temperature 103·4°, and attack of general convulsions, followed by coma and death within 28 hours, temperature rising to 105·2°. No evidence of metastatic abscesses or other sign of pyæmia. No P.M.

Fractures of skull.—Vault.

Males 3. D. 3.

1. Æt. 25. Died immediately after admission. Fissure fracture along sagittal suture into occipital bone and into orbital wall and sella turcica in front; laceration of superior longitudinal sinus; no injury to brain; no other injuries.

2. Æt. 2½. Died immediately after admission. No clinical note. Jagged transverse fracture across vault extending into both temporal fossæ; brain pro-

truding through fracture; laceration of cortex of brain under fracture and hæmorrhage into left lateral ventricle.

3. Æt. 31. Thrown from cart; immediate loss of consciousness; stertorous respiration; temperature 100·4° on admission, 104·2° four hours later, 107° shortly after death, 6 hours after admission. P.M.—Fissure fracture of occipital bone, extending into foramen magnum; tip and orbital surface of right frontal lobe much contused; no spinal injury; viscera normal.

Compound.—Males 11, females 2. C. 11, D. 2. Frontal bone 8 (1 gun-shot); parietal 3 (1 comminuted); parieto-occipital 1; occipital 1. One continued drowsy till 10th day, when slight irregular twitchings of legs, arms, and face developed, with temporary cyanosis and partial loss of consciousness, each fit followed by retching; no actual vomiting; no further pathological symptoms. Discharged cured 20th day.

Gun-shot fracture.—Male, æt. 30. Shot at on Clapham Common in the dark; assailant not discovered nor weapon. Small pistol bullet passed through brim of felt hat into lower frontal region. No symptoms on admission; trephining; comminution of wall of frontal sinus; two small punctures in dura mater; healing without any complication. Discharged cured 22nd day.

Fatal cases.

1. Male, æt. 47. Fell 10 feet down stone area steps on to head 3 hours before admission; coma and complete paralysis from time of accident; pulse 52; 2-inch scalp wound left temporo-occipital region. No sign of rallying. Hæmatemesis followed by sudden death 10 hours after admission. P.M.—Fissure fracture left fronto-parietal region, rupturing middle meningeal artery; contrecoup laceration of right temporo-sphenoidal lobe.

2. Male, æt. 42. Struck in frontal region by piece of wood from circular saw. On admission semi-conscious; compound fracture right frontal eminence; 8 convulsions, all commencing with twitching of left eyelid, retraction left angle of mouth, followed by general tonic and clonic convulsion, respiration laboured and stertorous; trephining; comminuted fracture; laceration of dura mater and brain, latter protruding, fragments removed; contused tissue and clot washed away; drainage and iodoform dressing; improvement in respiration and return of consciousness soon after operation; temperature rose on 3rd day, ranging from 101° to 103°. Signs of cerebral irritation; gradual relapse into semi-comatose condition with retention of urine, temperature 102°—103°; constant oozing of blood from wound with softened brain matter; death 5th day. P.M.—Laceration of brain and meningitis.

Simple depressed fracture.—Males 3, females 2. C. 3, D. 2. Of 3 non-fatal cases 2 had slight depression frontal region, and no serious symptoms beyond those of concussion; 1 female aged 4 discharged 3rd day, 1 male aged 18 on 22nd day. The third case, male aged 15, blow from wooden ball 6 days before admission, unconscious 1½ hours; "unable to move" 1 day, then rallied and remained without symptoms till attack of severe temporo-occipital pain and vomiting on 6th day. Admitted with temperature 102°, rising to 103° next day, when trephining performed; elevation and removal of depressed fragments; iodoform dressings and drainage. After operation temperature fell to normal

with exception of two transient rises to 100° and 101°. Suppuration of wound, otherwise no complication; discharged cured on 40th day after operation.

Fatal cases.

1. Male, æt. 35. Struck on vertex by heavy falling beam. Unconscious from time of accident. Respiration quiet at first, soon becoming stertorous. On admission complete coma; contracted pupils. Pulse 40. Slow oscillatory movements of eyes. Scalp over vertex distended with blood, with progressive increase. Bilateral tonic spasms of legs, then arms. Exploration.—Scalp distended with blood-clot; oval area, 8 in. × 3 in., of vault of skull depressed and comminuted, removed; much hæmorrhage from many points; laceration of superior longitudinal sinus, which was seized with artery forceps (left on); dura mater intact. During operation spasms ceased; pupils dilated slightly, and became active to light; pulse quickened gradually, reaching 120 per minute, but soon failed in strength, and death occurred within three quarters of an hour of admission. P.M.—Fracture in vault radiating from gap left by removal of fragments; contusion of vertical convolutions; no other injuries.

2. Female, æt. 22. Knocked down by passing cart. Unconscious on admission. Depressed fracture, left parieto-occipital region; no paralysis. Soon after admission respiration suddenly slow and stertorous, with sign of rapidly deepening coma. Trephining near seat of depression; dura mater tense, incised; no clot; opening in skull enlarged; nothing found. Slight temporary improvement in pulse and respiration, soon followed by relapse and death, 1½ hours after admission. P.M.—Subdural hæmorrhage on right side; contusion of right temporo-sphenoidal lobe; no sign of damage to left hemisphere; fissure fracture through squamous portion of temporal bone, and separation of parieto-squamous suture on left side; fracture through base of lesser wing of sphenoid on right.

Compound depressed.—Males 5. C. 4, D. 1.

1. Æt. 9. Struck by iron swing. Compound comminuted depressed fracture, right frontal region; laceration and protrusion of cerebrum. Conscious; screaming when examined. Chloroform; trephining; depressed fragments, some sticking into brain, removed; wound washed with carbolic lotion; suture; iodoform dressing. Temp. never above 100·2° (2nd day). Slight tendency to protrusion in 3rd week, prevented by silver plate wrapped in iodoform gauze. Wound completely cured by 45th day. Restless on day after operation, otherwise no cerebral symptoms. Discharged 55th day.

2. Æt. 11. Struck by half-brick. Conscious on admission. Compound comminuted depressed fracture, left upper occipital region. Trephining; splinters removed; wound of dura mater found; a few bleeding points secured; wound washed with carbolic lotion (2½ per cent.). Stitches and tube removed at first dressing on 3rd day; wound healed except around drain-tube. No cerebral symptoms. Temp. normal throughout. Discharged cured on 63rd day.

3. Æt. 5. Thrown from pony. Compound depressed fracture, right anterior parietal region. Conscious. Chloroform; trephining; elevation of fragments; small wound of dura mater; catgut sutures and iodoform dressings. Temp. 99° on 2nd day after operation, never higher. Tube and stitches removed on 2nd day. No complication. Discharged cured 24th day.

4. Æt. 8. Kick from horse, right frontal region; wound extending across

middle line; slight comminution. Soon after admission irregular convulsions, followed by drowsiness and cerebral irritation. Chloroform; removal of splinters; carbolic (2½ per cent.) lotion; tube and silver sutures. No complications. Temp. once 100° (2nd day), otherwise normal. Discharged cured on 20th day.

5. *Fatal case.*—Æt. 10. Struck by shaft of cart. Drowsy, but conscious. Compound comminuted depressed fracture, right frontal eminence. Chloroform; wound enlarged; trephined; fragments removed; dura mater uninjured; perchloride dressing. Some relief after operation, but remained somewhat drowsy. Suppuration of wound from 4th day. Temp. 99°—101° till 11th day, then higher, 101°—103°, often differing by a degree on different sides of body, but not constant. Slight hernia cerebri from 15th day. Death in convulsions 18th day. P.M.—Hernia cerebri, springing apparently from abscess in anterior left frontal lobe; suppurative meningitis, which appeared to extend down the spinal canal.

Fracture of base.—Males 9, females 1. C. 5, R. 1, D. 4. Anterior fossa 2; middle fossa 5; posterior fossa 3; deafness 2; epistaxis 3; bleeding from ears 6; serous discharge from ears 2; subconjunctival extravasation 4; mastoid ecchymosis and optic neuritis 1; facial paralysis 1; "cerebral irritation" 1; convulsions 2; subdural hæmorrhage 2 (1 rupture of middle meningeal artery); 1 discharged relieved with some delusions, but no other sign of insanity; fracture of clavicle 1, of ribs 1, of humerus and ulna at elbow-joint, compound, 1.

Causation.—Falls on to head 5; fall from railway train 1; thrown from cart 3; knocked down by cart 1.

Fatal cases.

1. Male, æt. 2½. Fell about 4 feet from table on to concrete floor on day before admission. Hæmorrhage followed by copious serous discharge from right ear; vomiting. On admission drowsy; much pain on right side of head; temp. 99°. Second day muscular twitchings, followed by irregular convulsions of limb and delirium up to death on 4th day. No post-mortem.

2. Male, æt. 34. Fell from railway train. Compound fracture into elbow-joint; amputation of arm. Death on following day. P.M.—Fracture through posterior fossa; slight contusion of frontal lobe below.

3. Male, æt. 27. Fell backwards from ladder, "several feet," on to head. "Cerebral irritation" present on admission; epistaxis; parietal hæmatoma; subconjunctival ecchymosis. Death from shock. P.M.—Fracture of middle fossa, extending into anterior fossa; rupture of left middle meningeal artery; contusion of left temporo-sphenoidal lobe; fracture of cartilages of 1st, 2nd, and 3rd ribs.

4. Male, æt. 20. Thrown from cab. Fell on to head on pavement. Unconscious on admission; cerebral irritation; very restless. A few hours after admission right side became rigid and paralysed; convulsions on left side. Second day general convulsions with flexion of all limbs most marked feature; temperature rising; 3rd day fits continued; in evening paralysis of left side. Death 2 a.m. next day, temperature rising in 3 hours from 105° to 107°, and 109° at death. P.M.—Fracture posterior fossa; subdural hæmorrhage left parieto-occipital region; contusion of left temporo-sphenoidal lobe and under surface of frontal lobe; doubtful fractured base.

Selected case.—Male, æt. 12. Fell 5 feet from wall. Cerebral irritation on admission, then dull and drowsy. Mastoid occipital hæmatoma present; mastoid ecchymosis 10th day; double optic neuritis 11th day; no further symptoms except occasional headache; temperature normal or subnormal. Discharged cured on 51st day.

Intracranial hæmorrhage without fracture.—Males 2, females 1. C. 1, D. 2.

1. Female, æt. 31. Kicked by horse while under influence of alcohol. Quarter of an hour after accident brought to hospital unconscious; 1½-inch scalp wound 1 inch below and behind left parietal eminence. No paralysis at first, but right hemiplegia without any facial paralysis developed with deepening coma; 12 hours after admission trephined at seat of scalp wound; no fracture; blood-clot between skull and dura mater; a second trephine hole made anterior to, and just above first; more clot removed; arterial bleeding from posterior part of aperture; actual source not discovered, so hæmorrhage stopped by plugging with small pieces of sponge; silk sutures in scalp wound except at point of sponge pressure; iodoform and salicylic dressing; gradual improvement in general condition after operation; slight return of power on right side noticed in about 6 hours; complete return of power by about 2nd day; not fully conscious of surroundings and speech somewhat indistinct till about 4th day; remained restless and excitable, and occasionally delirious in spite of sedatives for about 3 weeks; scalp wound healed well, but partly by granulation, owing to slight exfoliation of skull around trephine aperture. Sponge removed on day after operation; temperature varied irregularly between 99° and 101° for about 1 month (partly explained by suppuration in a contusion of inguinal region, and partly due to an attack of diarrhœa). Discharged cured on 129th day.

Fatal cases.

1. Male, æt. 15. History of hæmophilia both in patient and his family. Six days before admission fall on to occiput, small scalp wound dressed; no symptoms of cerebral injury. Wound progressed well till 6th day when slight hæmorrhage occurred, easily arrested by pressure of dressing. In evening of same day felt ill suddenly and vomited, went to lie down; 2 hours later found insensible on floor by side of bed. Admitted at midnight; no return of consciousness; signs of intercostal paralysis 15 hours later and death, temperature having gradually risen from 97·6° on admission to 104° at death. P.M.—No fracture. Dura and pia mater normal; extensive hæmorrhage into right frontal lobe, lacerating white matter and septum lucidum, filling right lateral, third and fourth ventricles, a little clot in left lateral ventricle. No signs of visceral disease.

2. Male, æt. 47. Brought home from drinking bout, nothing known of accident; right-sided convulsions in face, arm, and leg, after which left side noticed to be paralysed. Two attacks of convulsions on 2nd day (no definite order of symptoms made out); no return of consciousness; death 48 hours after admission; temperature rising gradually from 97·6° on admission to 102·8° at death. P.M.—Subdural extravasation on right side, source of hæmorrhage not found; no aneurysm or visible rupture of vessel.

Hernia cerebri.—Male, æt. 12. First admission 1887, gun-shot fracture parietal region; trephining; bullet not found; wound healed. Readmitted in 8 months having had "fits," pain in left side of head, loss of power right arm,

right facial paralysis, vomiting, optic neuritis, bulging of scar. Aspiration 23rd day, 1 drachm of clear fluid; exploration, removal of bone 27th day; hernia cerebri; incised abscess-cavity but bullet not found; death 42nd day. P.M.—Thick-walled abscess-cavity in posterior part of frontal convolution, extending into white matter of parietal and temporo-sphenoidal lobes; basal meningitis; small flattened bullet eventually found in white matter of right frontal lobe low down, surrounded by apparently healthy white matter; track of bullet could not be traced.

INJURIES TO CHEST, ABDOMEN, AND PELVIS.

Wound of chest.—Males 2, females 2. C. 3, D. 1.

1. Male, æt. 20. Stabbed in back, two superficial wounds, two penetrating pleura; one situated beneath angle of left scapula, through which on removal of dressing air was sucked with a whistling sound during inspiration, the other in 9th right interspace; extensive subcutaneous emphysema around both deep wounds. Wounds all healed by first intention by 3rd day; no hæmoptysis; no complications. Discharged cured on 13th day.

2. Female, æt. 25. Stabbed with knife first right interspace, ¼ inch from edge of sternum; much collapse; pneumothorax; dulness posteriorly right side of thorax, limit of dulness gradually extended for 4 days (probably due to (1) hæmorrhage and (2) inflammatory effusion); no hæmoptysis. Anterior wound healed 3rd day; suppuration about a superficial wound over spine of right scapula, pus burrowing among intermuscular planes; chest signs stationary till 18th day when right pleura aspirated, ¾ oz. clear blood-stained serum drawn off with relief to respiration. Steady progress without complication; transferred to medical ward on 55th day with dulness over right side of thorax posteriorly and respiratory sounds less marked than on left, otherwise well.

3. Female, æt. 28. Stabbed over 10th right intercostal space posteriorly; emphysema around wound; no sign of penetration of pleura. Discharged cured on 6th day.

Fatal case.—Male, æt. 31. Self-inflicted. Bullet wound 5th intercostal space anteriorly; no aperture of exit; emphysema around; "catchy" respiration; much shock. Death in 18 hours. P.M.—Left lung contracted and airless; not injured; hæmothorax; bullet traced into and apparently lodged in vertebræ, but not found.

Fractured ribs.—Males 21, females 1. C. 20, R. 1, D. 1.

Complications.—Pneumothorax 3; bronchitis 4; emphysema 3; bronchopneumonia 1; dislocation of clavicle 2; fracture of clavicle 3; traumatic delirium 1; necrosis of tibia 1; rupture of heart, spleen, and kidney, 1.

Fatal case.—Male, æt. 51. Run over. Died immediately after admission. No clinical notes. P.M.—No external wound; ribs 1 to 8 fractured about middle; much blood in left pleura; slit-like wound of left pulmonary vein at entrance into left auricle; half a pint of blood in pericardium; spleen reduced to a pulp; left kidney ruptured transversely.

Fracture of spine.—Males 3. D. 3.

1. Male, æt. 45. Fell 26 feet from scaffold on to pavement. Conscious when picked up, stating that he fell upon his feet (accident not seen). On admission total paralysis of lower extremities, and anæsthesia up to umbilicus; no hyperæsthetic zone; shock; no respiratory paralysis; surface cold (97°); no sweating. Three hours later surface of body above limit of paralysis warm and sweating profusely. Ether, median incision, examination of spines of vertebræ from 7th to 12th; most already separated by fracture; 6th and 7th spines and laminæ removed; cord exposed, found completely divided, including membranes opposite 12th dorsal vertebra; much contused also at level of 6th dorsal. Loose fragments and blood-clot removed; sutures; rallied from operation, but sank in about 9 hours with symptoms of dyspnœa; temperature 95° after operation, 97·4° at death. P.M.—Fracture through bodies of 7th and 10th dorsal vertebræ; double hæmothorax; no other injury.

2. Æt. 39. Fall from coal cart; run over. Death immediately after admission. P.M.—Fracture through body of 12th dorsal, detaching it from intervertebral disc below; laceration of sheath of spinal cord; fracture of 7th to 12th ribs on right side (7th, 8th, and 9th comminuted); 7th, 8th, and 9th on left side (7th and 8th comminuted); laceration of pleura; rupture of spleen and kidneys.

3. Æt. 54. Run over while intoxicated, detained at police station 4 hours. On admission marked loss of power in arms and legs, and apparent blunting of sensation. Paralysis and paræsthesia became more marked. On day of admission intercostals paralysed, anæsthesia up to 2 inches above nipple, and in arms over areas supplied by musculo-spiral and ulnar nerves; gradually sank during the day; increasing difficulty in respiration; death 50 hours after admission; temperature 95° on admission, rose to 105° during first 24 hours, subsided to 102° on day after admission, rising again gradually in evening, reaching 108·6° at death and 109° ½ hour after death. P.M.—Separation of 6th cervical vertebra from vertebra and disc below, which was similarly detached from 1st dorsal. No extravasation into sheath of spinal cord; no obvious damage to latter except for slight extravasation into grey matter of cord for about ¾ inch downwards from level of upper border of 4th cervical vertebra; no other injuries.

Injury to spine; paralysis of lower extremities.—Male, æt. 3. Run over by light van, which passed obliquely across pelvis from left thigh to right iliac region; collapsed and drowsy for about 12 hours, then paralysis of both legs with involuntary evacuations noticed; the latter condition remained till discharge; power in legs gradually returned, so that child could stand for a few minutes unsupported by 60th day; sensation appeared to be deficient at first, but was normal by about end of 2nd week; treated by galvanism; discharged cured except for want of control over evacuations on 74th day.

Wound of abdomen.—Male 1, female 1. C. 1, R. 1. Both incised wounds; 1 in right iliac region; no communication with abdominal cavity discovered; discharged at own request on 2nd day; 1 in right hypochondrium, exposing intestine, which was washed with carbolic lotion (2½ per cent.), and wound sutured. Discharged cured on 5th day.

Ruptured omentum.—Male, æt. 50. Squeezed between two carts; shock; vomiting; vomit on one occasion slightly streaked with blood; no sign of peritonitis. Death 5th day. P.M.—Ruptured omentum; hæmorrhage into peritoneal cavity; no other injury or disease.

Traumatic hydronephrosis.—Male, æt. 5. Run over 2 days before admission. On admission shock; temp. 101°; slight hæmaturia on 1st day only; swelling in left lumbar region gradually developed; 24th day chloroform, aspiration, 23 oz. clear fluid, alkaline, containing trace of urea; fluid reaccumulated twice; aspirated 51st and 74th day; no constitutional symptoms. Discharged "cured" on 140th day. Readmitted 2 months later with slight fulness in lumbar region, but without active symptoms or definite signs of reaccumulation of fluid.

Rupture or contusion of kidney.—Males 3, C. 3. Two run over; 1 had fallen 15 feet from a tree. Vomiting, collapse, hæmaturia (blood uniformly diffused through urine) in 2 within a few hours of accident; in 1 on 2nd day. Tenderness in lumbar region in all; no sign of other injury. Slight rise of temperature on 2nd and 3rd day in 2 (100° and 102°), never above 99° in the other; no complications. Duration of hæmaturia 1, 2, and 8 days.

Traumatic peritonitis.—Males 4, females 1. C. 4, D. 1. Two run over; 1 fell from house-top; struck by some of the roofing; 2 symptoms attributed to "over-strained." No serious symptoms beyond those of slight peritonitis, except in—

Fatal case.—Female, æt. 5. Sudden "strain" in getting out of cart 5 days before admission. On admission distension of abdomen; legs drawn up; severe pain in hypogastrium; bowels opened 3 days before admission, not since; retention of urine (catheter; urine normal); temp. 102·4°; no improvement. Abdominal section 3rd day; purulent peritonitis not offensive; no perforation; cæcum normal; boracic irrigation. After operation temperature fell from 103·6° to 101°, then rose gradually, reaching 104° at death 13 hours later; no relief to symptoms. P.M.—General peritonitis, superficial ulceration of cæcum, congestion, and ? superficial ulceration of Peyer's patches resembling early typhoid fever; no perforation discovered.

Foreign body in digestive tract.—Male 1, female 1. C. 2.

1. Male, æt. 32. Tooth-plate (three teeth) swallowed during epileptic fit. Admitted with pain and sense of suffocation. Foreign body could not be felt by finger, forceps, or probang; latter passed without difficulty. Symptoms of pain and slight blood-stained expectoration continuing, forceps passed again next day; a pair with blade opening laterally introduced; œsophagus apparently spasmodically contracted around foreign body, which was eventually seized and extracted.

2. Female, æt. 39. Tooth-plate (one tooth) swallowed while eating a hard crust. Found, on examination with probang, to be impacted by cricoid cartilage. As attempts at forceps extraction caused severe dyspnœa, œsophagotomy performed; considerable difficulty in extraction, owing to metal hooks of plate; three sutures through whole thickness of œsophageal wall. Feeding by enema 5 days, then with tube. Suppuration of wound; leakage of saliva. Separation of small sloughs on 12th day. Discharged cured on 20th day.

Rupture of urethra.—Males 3. C. 3. Fall across a rail in all. Urethral hæmorrhage in all, with inability to urinate. Catheter passed and left in bladder in all. In two no serions symptoms. Catheter withdrawn on 2nd and 10th day respectively. Patients discharged on 15th and 17th days. The third case had much swelling from the first, and developed urinary abscess on 8th day. Incision; external urethrotomy. Urinary fistula, which gradually contracted and closed in 2 months. Traumatic stricture developed; treated by intermittent dilatation with graduated sounds up to No. 20—24 French. Discharged cured 103rd day.

Fracture of pelvis.—Males 5, females 3. C. 3, D. 5. Fracture through crest of ilium 1; through ramus of ischium 1; through ramus of pubes (ascending and descending) 1. All knocked down by carts. *Treatment.*—Rest, with flannel spica bandage. No complications.

Fatal cases.

1. Male, æt. 36. "Tramway smash," died shortly after admission. Fracture 2nd to 9th ribs on left side, 3rd to 6th on right side, with hæmothorax laceration of liver, fracture through rami of pubes and ischium on both sides, also through ilium on right side, separation of left sacro-iliac synchondrosis, extra-peritoneal rupture of anterior wall of bladder.

2. Male, æt. 60. Died immediately after admission. No clinical notes. Comminuted fracture of rami of pubes and ischium; no injury to bladder or urethra; cirrhosis of liver.

3. Female, æt. 35. Fall 40 feet; lived 2 hours after admission; unconscious. P.M.—Fracture of rami of pubes and ischium on both sides; separation of symphysis pubis and both synchondroses.

4. Female, æt. 7. Run over by omnibus. Moribund on admission; fracture of left pubic rami, of right crest of ilium, separation of both synchondroses; no injury to viscera.

5. Female, æt. 73. Fall downstairs. Fracture of pelvis, ribs, and clavicle; death on 4th day from collapse. No post-mortem.

Compound fracture of pelvis.—Female, æt. 4. Run over by brougham. Simple fracture of left femur, compound fracture of right pubic ramus, extra-peritoneal rupture of bladder. Leakage of urine through wound of compound fracture noticed 3rd day; urinary abscess in right groin incised 12th day; refracture of left femur for faulty position of fragments on 25th day; urinary fistula healed 53rd day; discharged cured on 69th day.

Separation of sacro-iliac synchondrosis.—Male, æt. 13. Knocked down and run over by cab. Mobility and sense of crepitus in region of right sacro-iliac synchondrosis; no actual fracture detected. Treated anteriorly; plaster of Paris splint on abdomen and thighs. Discharged cured on 39th day, able to walk well.

INJURIES OF UPPER EXTREMITIES.

Wounds—

Arm.—Males 7, females 2. C. 8, D. 1. Laceration of biceps 1; exposure of biceps and sheath of vessels 2; division of triceps and ulnar nerve by circular saw 1 (nerve and muscle sutured); partial return of sensation by 20th day. Division of median basilic vein 2, including—

Fatal case.—Male, æt. 67. Suicidal division of median basilic vein; much hæmorrhage; vein ligatured; wound healed well; symptoms of enlarged prostate and cystitis; catheter; boracic irrigation of bladder. Death 13th day from exhaustion. P.M.—Enlarged prostate; cystitis and pyelitis; bladder, ureters, and calices dilated; early suppurative nephritis.

Forearm.—Males 7, females 7. C. 12, R. 2. Division of nerves, ulnar, 1. Male, æt. 49. Clean incised wound of wrist (chisel); loss of sensation in 5th and ulnar side of 4th digit and palm; nerve suture; some return of sensation noticed within 8 hours; sensation completely restored by 12th day. Readmitted 4 months later having gradually lost sensation; explored; nerve involved in scar; liberated; complete return of sensation.

Wound of median nerve.—Female, æt. 42. Fell on to dirty glass bottle. Suture of nerve (also of divided flexor tendons); suppuration of wound; partial restoration of sensation and power of flexion of fingers when discharged on 26th day.

Hand.—Males 9, females 2. C. 10, R. 1 (discharged 2nd day at his own request). Two circular saw wounds—amputation through wrist 1; amputation through metacarpals 1. Two crushed fingers (cog-wheel)—amputation of fingers in both. Two lacerated wound of palm; hæmorrhage stopped by pressure.

Dislocations—

Humerus.—Males 2, females 7. C. 4, R. 4, U. 1. Right 5, left 3, not stated 1. One caused by direct violence; all subcoracoid. Cases cured—5 days, 7 days, 4 weeks, 5 weeks, and 2 months' duration; all reduced by manipulation. Cases relieved—9 weeks (2), 10 weeks, and 4 months' duration; attempted reduction by manipulation failed. Case unrelieved—5 months' duration (previous attempts at reduction by heel in axilla had caused lacerated wound in axilla); manipulation and extension attempted, but discontinued, as scar in axilla showed signs of breaking open.

Of elbow, compound.—Males 2.

1. Æt. 12. Knocked down at football. Humerus projecting through skin and clothes on inner side; radius and ulna displaced backwards and outwards. Ether; reduction; mercurial antiseptics and drainage; plaster of Paris splint. No complication except pustular eruption from mercurial dressing. Discharged "cured" 15th day.

2. Æt. 37. Fall, 25 feet. Compound dislocation radius and ulna backwards; fracture of coracoid process. Reduced under anæsthetic antiseptics and drainage; plaster of Paris splint. No complications. Adhesions ruptured under nitrous oxide on 49th day. Discharged cured 51st day; fair mobility in joint.

Fractures—

Scapula.—Males 3. Right scapula 2, both 1. Fracture more or less transverse across venter in 3; in 1 (case of double fracture) posterior margin detached.

Compound, of radius and ulna.—Males 3, females 1. C. 4.

1. Male, æt. 8. Fall from swing one day before admission. Fracture in lower third; bones at first protruding. Antiseptics; straight anterior and posterior splints. No complications. Discharged 4th day for further treatment as out-patient.

2. Male, æt. 10. Fall from horizontal bar. Fracture about middle of shafts; small punctured wound over fracture in ulna. Mercurial lotion to wound; iodoform dressing; internal angular splint, and plaster of Paris externally. Five days after admission sudden rise of temperature to 103°. Splints taken off; wound healed. Nothing to account for temperature, which was otherwise normal throughout. Discharged 13th day.

3. Male, æt. 27. Arm caught in machinery. Fracture about middle of shaft; lower end of upper fragment of radius protruding; lacerated wound of hand. Bone replaced after enlargement of wound; mercurial dressings; plaster of Paris case splint. Slight sloughing of soft parts of arm and hand, but no other complication. Discharged cured 27th day.

4. Female, æt. 80. Run over by omnibus. Fracture about junction of middle and lower third of shafts; extensive crushing and detachment of soft parts. Amputation 3 inches below elbow-joint; mercurial dressing. Some sloughing of skin and soft parts, but no constitutional symptoms. Discharged cured 39th day.

Compound, of ulna.—Males 2. C. 2.

1. Æt. 16. Circular saw wound into elbow-joint, detaching olecranon. Dislocation backwards of upper end of radius. Radius replaced; olecranon sawn even and wired to shaft of ulna; iodoform dressing. No complication. Drainage-tubes removed 14th day. Passive motion commenced on 20th day. Discharged cured on 58th day, without splint, to have passive movement as out-patient.

Hand.—Males 10. 8 compound, 2 comminuted. All cured. Carpus and matacarpus 1, treated by amputation at wrist-joint; flap taken from hypothenar eminence; fracture metacarpus 2 (treatment: amputation 1, resection of fragments 1); crushed fingers in all the rest, 6 treated by amputation. *Cause.*—Falling scaffold pole 1; falling beer barrel 1; fall from tramcar 1; the rest machinery accidents.

INJURIES TO LOWER EXTREMITIES.

Wounds.—Males 19, females 7. C. 23, R. 1, D. 2.

Selected cases.

1. *Amputation.*—Female, æt. 5. Foot and lower part leg completely avulsed by wheel of tramcar; skin stripped off almost as high as trochanter; amputation upper third of thigh; flaps gave way on 5th day; healing by granulation. Discharged cured on 60th day.

2. Male, æt. 11. Lacerated wound over left patella 50 days before admission; healed slowly by granulation until 44th day, when it was probed and bare bone discovered; the same night the joint became swollen and painful. Admitted 6 days later with suppuration in joint; temperature 102·4°; incised; washed out with chloride of zinc solution, 20 grs. to 1 oz.; temperature continued febrile till 10th day, when additional incisions made, after which progress favorable till discharge cured on 80th day.

Fatal cases.

1. Male, æt. 56. Had been treated elsewhere for weak heart and œdema of legs. On admission extensive wounds of both legs and feet caused by dray passing over them; no fracture; both feet œdematous; no other injuries. An hour and a half after admission restless and wandering; morphia injection; brandy enemata; never rallied. Death from shock 2½ hours after admission.

2. Female, æt. 5. Knocked down by van, and supposed to have been run over. Lacerated wound of thigh from middle of Poupart's ligament to great trochanter, about 8 inches long; no fracture; collapse; brandy administered; carbolic-oil dressing. Death next day. P.M.—Injuries found as above, and bronchiectasis.

Dislocations—

Of hip.—Males 3.

1. Æt. 33. Stumbled against some iron pillars and fell to ground 1 day before admission; dorsal dislocation; reduced easily by manipulation under anæsthetic.

2. Æt. 10. Fall while carrying another boy on his back, brought at once to hospital; dorsal dislocation; reduced easily under anæsthetic by manipulation.

3. Æt. 8. Liable to frequent spontaneous dislocation of hip for 2 years since first injury ("was digging in garden, and suddenly felt hip-bone slip out"); frequently able to reduce dislocation himself. On admission dorsal dislocation with sign of some irregularity about hip-joint (? congenital deformity); easy reduction under anæsthetic.

Of scaphoid.—Female, æt. 60. Slipped and fell down two steps, whole weight of body thrown on to foot, 6 months before admission. Treated with strapping. On admission dislocation of scaphoid inwards; movements of foot fairly good, weakness of internal arch during walking; no surgical interference.

Fractures.—Of femur.—Simple.

Neck.—12, intra-capsular 6, all females (left 4, right 2). *Causation.*—Fall 15 feet out of window on to hip 1; fall downstairs on to hip 2; false step and fall on to hip 3. *Treatment.*—Long outside splint 4; long outside splint with plaster of Paris 2; 1 discharged in leather splint.

Extra-capsular 6—males 5, females 1 (right 5, left 1). *Treatment.*—Long outside and plaster of Paris 6; 3 discharged in leather splints. Average age intra-capsular, excluding one aged 17, 66·2 (including do. 58); average age extra-capsular 55·15.

Shaft.—Males 56, females 16 (right 41, left 25, not stated 6). *Situation of fracture.*—Upper third 12; middle third 44; lower third 12; not stated 4; 2 double fractures (not included in above), in middle and just above condyle 1, in middle and in upper third 1; 1 green stick; 3 refractures; ununited 1 (fatal). *Causation.*—

Indirect violence 48; direct 18; doubtful 4 (1 ? spontaneous); not stated 2. *Complications.*—Concussion and cerebral irritation 1; retention 1; bedsore 1; scalp wound 2; effusion into knee-joint 1; bronchitis 1; delirium tremens 2; contraction of knee from old hemiplegia 1; delayed union 1 (treated in plaster of Paris and long outside splint for 120 days, cured); sloughing of skin and soft parts 1. *Treatment.*—Double inclined plane followed by plaster of Paris splint 1; Hodgin's splint 1; all the rest treated with anterior plaster of Paris and long outside with extension; 2 discharged with leather splint. Shortening on discharge recorded in 21 cases, viz.: none 11; ⅛ inch 2; ¼ inch 2; ½ inch 1; ¾ inch 2; 1 inch 2; 1½ inches 1 (in this case there was shortening, the present accident, due to a fracture many years before); in 1 case there appeared to be ¼ inch lengthening as result of treatment.

Fatal cases.

1. Male, æt. 39. Fall out of bed while intoxicated. Fracture in lower third of shaft. Plaster of Paris and long outside splint, and extension applied under anæsthesia (ether used first, but patient becoming cyanosed, chloroform administered, and taken well). Remained in condition bordering on delirium tremens till death on 12th day. Had been in chronic state of alcoholism for many months. P.M.—Fracture of femur as above; no callus; cirrhosis of liver; atrophy of brain; excess of subarachnoid fluid; no other sign of injury or disease.

2. Male, æt. 68. Fall out of bed. Fracture through great trochanter extending into neck; severe shock. Suppression of urine from 3rd day; sweetish smell in breath noticed 2nd day, but no urine could be obtained for examination. Death on 4th day, 74 hours after admission. P.M.—Urate of soda in cartilage of knee-joint; hypertrophy of heart, especially left side; granular kidneys; fracture left femur as above.

3. Male, æt. 58. Eighteen months previously run over by van. Fracture about middle of shaft of left femur. Treated as in-patient with plaster long outside and extension. Discharged after 7 weeks apparently cured in the plaster splint, which was not disturbed till application at the hospital, when femur found not united. Admitted, splints reapplied. 4 months later splints removed; no union; much callus; limb supported by sand-bags. Shortly afterwards retention of urine; ? cause. Catheter passed; cystitis; irrigation of bladder; albuminuria. Gradual loss of strength; much swelling and tenderness about region of fracture. Hectic temperature, with occasional rises to 103° and 104°. Seventh month, amputation of thigh in upper third; temporary improvement. Fourth day after suppuration and gaping of flaps; gradual exhaustion; bedsore. Death on 280th day from second admission. P.M.—Suppurating amputation wound; no lardaceous disease; chronic cystitis; emphysema and hypostatic congestion of lungs; no sign of pyæmia.

Compound.—Males 2. C. 1, D. 1.

1. Male, æt. 10. Run over by heavy cart. Fracture in upper third of shaft; small wound anteriorly; wound washed out with 2½ per cent. carbolic lotion; iodoform dressing; plaster of Paris splint, with long outside, and extension. Never disturbed till 31st day. Wound healed; union; no deformity. Discharged 34th day cured.

2. *Fatal case.*—Male, æt. 6. Run over by brewer's dray. Compound fracture upper third of shaft; extensive laceration of soft parts; primary disarticulation of hip after preliminary ligature of common femoral artery; flaps obtained from postero-internal and external (small flap) aspects of limb; sloughing of flaps; febrile temperature; 2 rigors 12th day. Death 13th day. P.M.—Pleuritic effusion; subpleural hæmorrhages; no sign of pyæmia.

Fracture of patella.—Males 22, females 4. Right 18, left 3, not stated 5. Transverse 24; T-shaped 1; stellate 1. *Cause.*—Muscular violence 19; direct violence 3; doubtful 4. *Complications.*—Hæmosthrosis 2 (aspiration); delirium tremens 1; previous fracture at same point 1; previous fracture at lower point 1; previous fracture of opposite patella 1. *Treatment.*—Immediate application of plaster of Paris splint and ice-bag 3; back splint and ice-bag followed by plaster of Paris splints after a few days 21; Neville's splint followed by plaster of Paris splint 1; massage for old fracture with stiffness of knee-joint 1.

Fractures of leg—

Tibia and fibula.—Simple.—Males 68, females 15. C. 82, D. 1. Right 55, left 19, not stated 9. Direct violence 17; indirect 61; doubtful 2; not stated 3; middle third 11; lower third 61; tibia in lower third with fibula in upper third 3 (in 1 comminution of tibia); tibia in upper third and fibula lower third 1; tibia in lower third and fibula in middle 2; both bones in lower third and tibia also in middle 1; tibia in middle and fibula in lower third 1; not stated 3. *Complications.*—Superficial wound 1; splint sore, suppuration of ankle-joint, pyæmia (see fatal case below), 1; synovitis of knee-joint 1. *Treatment.*—Immediate application of lateral plaster of Paris splints in all; in 1 plaster taken off on 25th day and Cline's splint applied with pad to correct deformity; discharged cured on 61st day; refracture for union in bad position on 37th day 1.

Fatal case.—Male, æt. 62. Fall while walking. Simple "Pott's fracture" right leg; no wound, but slight ecchymosis over internal malleolus; put up in plaster of Paris splint; no pain or temperature till 7th day (temp. 101°); 8th day, splints taken off; sloughing ulcer over interior malleolus (temp. 102°); 11th day, ankle-joint involved; incised and drained with antiseptics; 15th day, rigor; 16th, amputation upper third of leg. Death from pyæmia 19th day. P.M.—Pus in left knee-joint; right pleurisy; effusion turbid; no pulmonary infarcts.

Compound.—Males 17, females 4. C. 20, D. 1. Right 11, left 9, not stated 1. Fracture in upper third 1; middle third 2; lower third 18; direct violence 9; indirect 10; doubtful 1; not stated 1. *Complications.*—Necrosis 4; emphysema around wound 1; eczema 1; erysipelas 2; measles 1; bronchitis 1; fracture into and wound of ankle-joint 1. *Treatment.*—Antiseptic and plaster of Paris splint 12; antiseptic and Neville's splint 1 (case with eczema); primary amputation 2 (upper third of leg); secondary amputation 3 (1 by Gritti's method through condyles of femur on 16th day, antiseptics having failed; 2 in upper third of leg, one on 29th day after failure of antiseptics, the other on 46th day after primary wiring of fragments followed by suppuration and necrosis); scraping 1 (old case); removal of necrosed fragments 3.

Fatal case.—Female, æt. 65. Run over by cab. Fracture in upper third suppuration 6th day; death from exhaustion 20th day. No P.M.

Compound comminuted.—Males 5, females 1. C. 5, D. 1. Right 5, left 1. *Indirect violence* 2, both in lower third of leg; 1 treated by resection and wiring together of fragments, 1 by antiseptics and plaster of Paris splint; both discharged cured on 83rd and 95th days respectively; good union. Direct violence 4, 2 in upper third of leg; 1 treated by antiseptics, cured 35th day; 1 primary amputation in upper third of leg, discharged cured 49th day; 2 in lower third, both treated by antiseptics, 1 discharged cured on 93rd day; 1 aged 42, male, died on 6th day from pneumonia.

Tibia only—

Simple.—Males 35, females 10. C. 45. Right 18, left 25, not stated 2. Indirect violence 35, direct 9, not stated 1. *Situation.*—Middle third 12; lower third 33; 2 green stick. *Complications.*—Comminution 1; hæmatoma of calf 1; hæmatoma of groin 1; synovitis of knee 1; all treated with lateral plaster of Paris splints.

Compound.—Males 2. C. 1, R. 1. Right 1, left 1. Both in lower third of leg. Both treated by antiseptics and plaster of Paris splints; 1, aged 25, fracture by direct violence, suffering from syphilitic ulcers of leg, had some suppuration, no sign of necrosis, discharged relieved at his own request on 56th day; 1, aged 14, had also fracture (simple) of fibula in opposite leg, discharged cured 44th day.

Compound comminuted.—Male, æt. 29. Run over by railway truck. Fracture in middle third; much laceration of soft parts; no pulsation in tibial arteries below; no fracture of fibula. Primary amputation in upper third of leg. Discharged cured 73rd day.

Fibula only.—All simple. Males 30, females 8. C. 38. Right 21, left 13, not stated 4. Indirect violence 27, direct 8, doubtful 3. Fracture in upper third 2; middle third 1; lower third 32, 1 comminuted; not stated 2. One double fracture in upper and lower thirds (not included in above). *Complications.*—Synovitis of ankle 2; rupture of internal lateral ligament 2; synovitis of knee 1 of shoulder 1; bronchitis 1.

Compound of foot.—All by direct violence.

Of metatarsus.—2. 1 æt. 25, male, treated by primary (Syme's) amputation 1 æt. 38, male, treated by antiseptics.

Of phalanges.—3. 1 treated by amputation of great toe; 1 do. of little toe 1 by antiseptics. All cured.

Separation of epiphyses.—Males 4. C. 4.

Femur.—1. Upper epiphysis. Æt. 8. Fall 20 feet from stack of timber on to right hip, heavy plank falling on left hip; soft crepitus; slight eversion; ½ inch shortening; anterior plaster of Paris splint, with long outside splint, and 4 lbs. extension. Discharged cured, ¼ inch shortening, on 43rd day.

2. Lower epiphysis. Æt. 8. Hanging behind a cab, leg caught and twisted between spokes of wheel. Lower end of shaft displaced backwards into popliteal space; treated with back splint 8 days before brought to hospital; ⅝ inch

shortening; put up in double Thomas's splint; 4 lbs. extension. Discharged 37th day in plaster of Paris; ¼ inch shortening.

Tibia and fibula.—Lower epiphysis (2 cases). One æt. 10, foot caught between two railings; no deformity; treated in MacIntyre splint 9 days, then plaster of Paris splints; 1 æt. 16, foot caught between spokes of wheel while getting out of a waggon; treated in plaster of Paris splints. Both discharged cured 16th and 21st days respectively.

Lacerated wound of ankle-joint.—Male, æt. 6. Run over by dust-cart. Antiseptic dressings, temperature rising gradually to 101°—103° by 3rd day; foot placed in boracic lotion bath 6th day; incisions and irrigation 7th day; erysipelas 13th day; discharged cured 106th day. Small superficial wound; healthy granulation; able to walk with fair mobility of ankle-joint.

SPECIAL TABLE I.—*Strangulated*

No.	Occupation.	Age in years.	Sex.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	Cabdriver	66	M.	R.	20 years	6 hours	?
2	—	—	M.	R.	2 years	1 day	?
3	Railway guard	36	M.	L.	14 days	1 day	?
4	—	4	M.	L.	Congenital	1 day	?
5	Formerly acrobat	72	M.	R.	Several years	1 day	?
6	—	33	M.	R.	6 years	4½ hours	?
7	Labourer	40	M.	L.	3 years	5 hours	?
8	—	67	M.	R.	Many years	6 hours	?
9	Newsagent	58	M.	R.	Since infancy	6 hours	?
10	Carpenter	39	M.	R.	Congenital	3 hours	?
11	—	44	M.	R.	Congenital	4 hours	?
12	—	1 6/12	M.	R.	Congenital	2 hours	?
13	Porter	78	M.	L.	Many years	6 hours	?
14	—	3	M.	R.	14 days	1 day	?
15	Clerk	32	M.	R.	6 hours	6 hours	?
16	—	—	M.	—	8 years	6 hours	?
17	Coachman	53	M.	R.	10 months	3 days ?	?
18	—	1	M.	R.	Congenital	1 day	?
19	—	72	M.	R.	—	—	?
20	—	50	M.	R.	18 months	4 hours	?
21	—	3½	M.	R.	Congenital	4 hours	?

Hernio

22	Waiter	23	M.	L.	8 years	1 day	Enterocele
23	Mechanic	45	M.	R.	8 years	1 day	Entero-epiplocele
24	Pensioner	56	M.	L.	18 years	2 days	,,
25	—	1	M.	L.	Congenital	2 days	Enterocele

ernia.—Inguinal.

Treatment.	No. of days in hospital.	Result.	Remarks.
Ice-bag, taxis	14	C.	Melæna on second day.
Ice-bag and spontaneous reduction	1	C.	
,, ,, ,,	2	C.	
Ice-bag, taxis	10	C.	
,, ,,	9	R.	Partly irreducible. Admitted 6 months later (1889); herniotomy; vermiform appendix in sac; perforation and abscess in sac; cured.
,, ,,	8	C.	
,, ,,	3	C.	
,, ,,	7	C.	
,, ,,	15	C.	
,, ,,	1	C.	
,, ,,	4	C.	
,, ,,	1	C.	
Taxis	1	C.	
Spontaneous reduction	4	C.	
Ice-bag, taxis	1	C.	
Taxis	3	C.	
,,	1	C.	
Ice-bag, taxis	1	C.	
Ice-bag	1	C.	No notes.
Ice-bag, morphia	6	C.	
Ice-bag, taxis, reduction. Operation for radical cure 34 days later; neck of sac excised; ring closed with kangaroo tendon	54	C.	

tomy.

Ether; sac opened; intestine and small partially descended testis; sac and testis excised, neck ligatured and pillar of ring sutured; drainage-tube; iodoform and salicylic dressing	28	C.	Bronchitis 7th day.
Ether; sac opened; much omentum ligatured and removed; neck of sac divided and proximal end ligatured; suture of pillars of ring (catgut)	31	C.	
Ether; sac opened; much omentum, small knuckled intestine, "hour-glass" constriction in sac causing strangulation; omentum ligatured and removed; neck of sac ligatured. Death 15 minutes after operation	1	D.	Feeble and much collapsed before operation. P.M.—No peritonitis or hæmorrhage; carcinoma of stomach.
Chloroform; neck of sac ligatured and divided, sutured to boundaries of canal with catgut	2	D.	Rallied well from operation. P.M.—Bronchitis.

No.	Occupation.	Age in years.	Sex.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
26	—	52	M.	R.	Congenital	5 days	Enterocele
27	Labourer	38	M.	R.	6 years	? 5 days	Epiplocele

Inguinal Hernia.—

No.	Occupation.	Age.	Sex.	Side.	Duration of hernia.	Reducible or irreducible.	Structure of hernia.
1	Butcher	34	M.	R.	1 year	Reducible	?
2	Carman	16	M.	L.	2 years	„	?
3	Painter	29	M.	R.	18 months	Irreducible	?
4	Labourer	74	M.	R.	35 years	„	? Entero-epiplocele
5	Cabinet-maker	—	M.	—	Many years	Reducible	?
6	—	69	M.	R.	20 years	Irreducible	Entero-epiplocele
7	—	8 months	M.	R. & L.	Congenital	Reducible	?
8	Clerk	80	M.	R.	30 years	„	?
9	Cheesemonger	39	M.	L.	14 days	„	?
10	Labourer	54	M.	R. & L.	20 years	„	?

Radical Cure

11	—	74	M.	L.	Some years	Irreducible	Entero-epiplocele (large intestine)
12	Dentist	24	M.	R.	Congenital	„	Epiplocele
13	Collier	28	M.	L.	3 years	Reducible	Entero-epiplocele

Treatment.	No. of days in hospital.	Result.	Remarks.
Ether; incision of sac, only fluid escaped; wound enlarged, knuckle found higher up, constricted at internal ring; gut returned; pillars of ring sutured, sac dissected out and removed; much collapse. Death on 3rd day	4	D.	Congenital hernia, with hydrocele of lower part of sac. P.M.—Gut recoverable; no peritonitis; congestion of lungs.
Ether; sac incised; no intestine found; inflamed mass of omentum removed; pillars of ring sutured	52	C.	

Not Strangulated.

Treatment.	No. of days in hospital.	Result.	Remarks.
No operation	38	Nil	Chronic bronchitis, rendering use of anæsthetic dangerous.
Ice-bag	5	C.	Inflammation due to contusion.
„	8	C.	Orchitis.
„	2	C.	
None	1	Nil	Left hospital at his own request. Apparently non compos mentis.
Ice-bag	6	R.	Obstruction symptoms 3 days.
None	12	Nil	Signs of congenital syphilis.
Truss	5	R.	
Rest	7	R.	Pain, &c., due to severe strain, causing formation of slight hernia.
Truss	33	R.	

Operations.

Ether; incision; removal of omentum; intestine returned; pillars of ring sutured	21	C.	No impulse on discharge.
Ether; removal of omentum; pillars of ring sutured; signs of collapse after operation; abdominal section same evening; intra-peritoneal hæmorrhage from giving way of ligature on omentum; re-ligature. Death on 2nd day after operation	3	D.	No post-mortem.
Ether; omentum removed; dissection of sac and removal; pillars sutured with kangaroo tendon	38	C.	Veins of spermatic cord distributed around sac of hernia, causing difficulty in removal of latter.

No.	Occupation.	Age.	Sex.	Side.	Duration of hernia.	Reducible or irreducible.	Structure of hernia.
14	Telegraph clerk	21	M.	L.	1 year	Reducible	—
15	Labourer	17	M.	R.	8 days	,,	?
16	—	54	M.	R.	25 years	,,	Entero-epiplocele
17	Postman	20	M.	L.	Congenital	,,	—
18	Errand boy	14	M.	R.	Noticed 1 month; ? congenital	,,	?
19	Painter	51	M.	R.	12 years	Irreducible	Epiplocele
20	Pensioner	59	M.	R.	20 years	Reducible	?
21	—	13	M.	R.	Congenital	,,	?
22	Porter	16	M.	L.	From infancy	,,	Epiplocele
23	—	4½	M.	R.	,,	Irreducible	,,
24	—	12	M.	R.	Congenital	Reducible	?
25	Housemaid	25	F.	R.	1 year	,,	?
26	Caretaker	57	M.	R.	10 years	,,	?

Treatment.	No. of days in hospital.	Result.	Remarks.
Operation; radical cure	45	C.	No details of operation.
External ring closed by suture; no hernial sac formed at operation	22	C.	No truss required.
Ether; neck of sac divided and ligatured, and pillars of ring closed by suture (silk); small piece of omentum ligatured and removed	74	C.	Small sinus on discharge.
Neck of sac divided and closed by sutures, and invaginated into inguinal canal; pillars of ring closed by suture (kangaroo tendon)	31	C.	
Pillars of ring closed with suture; sac not opened	136	C.	Undescended testis (in inguinal canal) on same side. Discharged 21 days after operation.
Excision of sac; removal of adherent omentum	30	C.	
Double ligature of neck of sac; division between ligatures; sac not opened; pillars of ring sutured with kangaroo tendon	85	C.	Probably enterocele. Discharged 60 days after operation.
Inverted undescended testis removed; sac excised; conjoined tendons united to Poupart's ligament by Macewen's suture	46	C.	Sac empty at operation.
Small thin-walled sac excised; neck ligatured; pillars of ring united with catgut; small pieces of omentum ligatured and removed	15	C.	Probably funicular hernia.
Sac incised; omentum (adherent at external ring) removed; sac dissected out, drawn up into canal by suture; conjoined tendon united to Poupart's ligament by kangaroo tendon suture	39	C.	Funicular.
Sac incised; testis drawn down into scrotum and fixed by suture; sac dissected up and drawn into canal, and ring closed in same way as Case 23 above	41	C.	Sac of hernia empty at operation; to allow testis to be fixed to bottom of scrotum, globus major of epididymis detached from testis.
Sac ligatured at neck and excised; pillars of ring closed with catgut	25	C.	Sac empty at operation. Appeared to be enlarged canal of neck.
Incision; supposed hernia found to consist of old sac, walls half an inch in thickness; this was ligatured and removed	3	D.	Admitted with symptoms suggestive of strangulation, probably due to purgatives administered before admission. P.M.—Chronic cohesion of intestines; no recent peritonitis; congestion of lungs.

Femoral Hernia.—

No.	Occupation.	Age.	Sex.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	Grocer	27	M.	R.	3 years	1 day	?
2	Married	36	F.	R.	4 days	? 3 days	?
3	Charwoman	31	F.	L.	5 years	1 day	?
4	—	48	F.	R.	Several months	1 day	?
5	—	45	F.	R.	2 years	A few hours	?
6	Cook	60	F.	R.	5 years	3 days	?

Hernio

7	—	71	M.	R.	5 years	2 days	Entero-epiplocele
8	Nil	73	M.	L.	A few months	3 or 4 days	Enterocele
9	Labourer	70	M.	L.	20 years	3 days	Entero-epiplocele
10	—	57	M.	L.	—	2 days	„
11	Married	66	F.	L.	10 years	2 days	„
12	Married	70	F.	R.	3 days	3 days	Enterocele
13	Married	38	F.	R.	6 days	6 days	Entero-epiplocele
14	Widow	69	F.	R.	4 days	4 days	Enterocele
15	Widow	79	F.	R.	Many years	1 day	Entero-epiplocele

Strangulated.

Treatment.	No. of days in hospital.	Result.	Remarks.
Ice-bag and taxis	2	C.	
,,	3	C.	
Ice-bag	4	C.	Two previous admissions. Herniotomy for strangulation 5 years, and strangulation reduced by ice-bag and taxis 1 year ago.
Taxis	10	C.	
Ice-bag and taxis	6	C.	
Taxis	31	C.	

tomy.

Incision; intestine replaced without incision of neck; adherent omentum ligatured and removed; sac excised	20	C.	
Incision after injection of cocaine; gut intensely congested, sutured to skin and incised; neck not incised, as finger could be passed into intestine beyond constriction	3	D.	Much collapse from first; never rallied. No P.M.
Incision; intestine much congested, returned; sac bisected, tied in two parts at neck and incised	4	D.	Progress good till 2nd day; severe fit of coughing, followed by abdominal pain, vomiting, &c. Death 4th day. P.M.—Perforation of bowel; peritonitis.
Incision; omentum excised; knuckle of intestine fixed in wound; iodoform plugs	1	D.	Omentum and intestine (2 inches) gangrenous. P.M.—No peritonitis.
Incision; intestine returned; omentum ligatured and excised	3	D.	P.M.—Intra-abdominal hæmorrhage; no patent vessel found; peritonitis.
Incision; very tight constriction; gut intensely congested; returned just within ring	16	D.	Progress good till 13th day, when temperature rose (100°—101°), with slight abdominal pain. Death 16th day; symptoms of dyspnœa. No P.M.
Incision; much congestion and very tight constriction of gut, returned; sac excised	1	D.	Temperature rose rapidly from 98° at operation to 105·8° at death, 24 hours later. No P.M.
Incision; gut congested, not gangrenous. Death during operation	1	D.	Severe collapse on admission. Death in 2 hours.
Incision; gut returned; omentum ligatured and removed	19	C.	

No.	Occupation.	Age.	Sex.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
16	—	44	F.	L.	2 years	3 or 4 hours	Enterocele
17	Married	44	F.	L.	3½ years	3 days	Entero-epiplocele
18	Married	30	F.	L.	6 years	2 days	,,
19	—	62	F.	L.	20 years	3 days	,,
20	Married	46	F.	—	2½ years	2 days	,,
21	Married	54	F.	L.	18 years	2 days	,,
22	—	59	F.	R.	6 years	2 days	,,
23	Married	50	F.	L.	4 years	4 days	,,
24	—	29	F.	L.	1 year	2 days	Enterocele
25	Laundress	49	F.	L.	4 years	4 days	Epiplocele
26	Married	36	F.	R.	13 years	4 days	Enterocele
27	Married	44	F.	R.	10 years	1 day	Epiplocele
28	Married	64	F.	L.	9 years	2 days	Entero-epiplocele
29	Married	55	F.	R.	4 months	1 day	?

Treatment.	No. of days in hospital.	Result.	Remarks.
Incision; gut returned; sac ligatured at neck and excised	25	C.	
Incision; gut partly adherent, separated, and returned; omentum ligatured and excised; sac dissected up, twisted, and transfixed by silver wire suture through skin	42	C.	Sac subsequently sloughed, and came away through wound. No other complication.
Incision; gut returned just within ring as being much congested; drainage-tube into ring; omentum ligatured and excised	17	C.	No complication.
Incision; omentum almost gangrenous, ligatured and removed; gut much congested, but returned; sac ligatured at neck and excised	25	C.	No complication.
Incision; thick sac; gut returned; omentum and sac ligatured and excised	19	C.	No complication.
Incision; adherent omentum separated, ligatured, and removed; gut returned; sac ligatured and excised	46	C.	
Incision; omentum and sac ligatured and excised; gut returned	89	C.	
Incision; contents returned; neck of sac ligatured	29	C.	No anæsthetic, owing to extreme collapse before operation. Contents of sac not severely strangulated.
Incision; gut returned; neck of sac ligatured; sac excised	23	C.	
Incision; omentum and sac ligatured and excised	21	C.	No obstruction, but all other symptoms of strangulation.
Incision; gut returned; sac ligatured and excised	21	C.	
Incision; omentum ligatured (adhesions separated) and excised; sutures passed through Poupart's ligament and pectineal fascia, including neck of sac	27	C.	Large intestine appeared at ring on pulling down sac.
Incision; gut returned; omentum and sac ligatured and excised	60	C.	Herniotomy for strangulation 9 years before admission.
Ice-bag and taxis, relief; herniotomy 4th day; sac empty; double ligature of neck, division between	20	C.	

Femoral Hernia.—

No.	Occupation.	Age.	Sex.	Side.	Duration of hernia.	Reducible or irreducible.	Structure of hernia.
1	Servant	24	F.	R.	5 years	Irreducible	Thickened sac, containing fluid and omentum
2	Servant	31	F.	R.	2 years	,,	Thick sac, adherent omentum

Umbilical Hernia.—

No.	Occupation.	Age.	Sex.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	Labourer	41	M.	—	—	—	?
2	Married	51	F.	—	10 years	1 day	Entero-epiplocele
3	Sawyer	35	M.	—	10 days	10 days	Epiplocele
4	Married	38	F.	—	9 years	2 days	?

Oper

5	Needlewoman	64	F.	—	15 years	9 days	Entero-epiplocele
6	—	1 day	F.	—	1 day	1 day	Cæcum, vermiform appendix, ileum

Not Strangulated.

Treatment.	No. of days in hospital.	Result.	Remarks.
Excision of omentum (adherent) and sac	22	C.	The hernial sac contained reddish serous fluid; a plug of omentum exactly fitted the neck like a valve, preventing any return of fluid into peritoneal cavity as soon as pressure was made on the sac.
Excision of omentum and sac	56	C.	

Strangulated.

Treatment.	No. of days in hospital.	Result.	Remarks.
Ice-bag	2	C.	Refused to stay longer. Symptoms all subsided.
"	9	C.	Umbilicus situated in centre of tumour.
Iodoform dressing	27	C.	Hernial protrusion sloughing on admission; allowed to slough away. Marked cirrhosis of liver present.
None	1	Nil	Although suffering from pain and vomiting, with obstruction, refused to stay in hospital. No severe constitutional symptoms.

tion.

Ether, incision, exploration	1	D.	P.M.—Ascending colon from cæcum to hepatic flexure in sac; omentum adherent; knuckle of small intestine involved in omentum; no sign of strangulation except in latter
Chloroform, incision; contents washed with sublimate solution; returned after vertical incision of constriction; suture of peritoneum and skin	4	D.	Skin sloughing on admission. Sign of peritonitis at operation. Progress favorable till sudden death on 4th day. No P.M.

Umbilical Hernia.—

No.	Occupation.	Age.	Sex.	Side.	Duration.	Reducible or irreducible.	Structure of hernia.
1	—	39	F.	—	4½ years	Partly reducible	?

Ventral Hernia.—

No.	Occupation.	Age.	Sex.	Side.	Duration of hernia.	Duration of strangulation.	Structure of hernia.
1	—	72	F.	R.	Many years	1 day	Enterocele

Not Strangulated.—

No.	Occupation.	Age.	Sex.	Side.	Duration.	Reducible or irreducible.	Structure of hernia.
1	Servant	35	F.	R.	2 years	Reducible	Enterocele

Not Strangulated.

Treatment.	No. of days in hospital.	Result.	Remarks.
Belt.	8	R.	

Strangulated.

Treatment.	No. of days in hospital.	Result.	Remarks.
Incision; suture of gangrenous gut to skin; artificial anus	1	D.	Fæculent pus in sac at operation. Hernia apparently in right linea semilunaris, but parts distorted by size of hernia.

Radical Cure.

Treatment.	No. of days in hospital.	Result.	Remarks.
Incision; contents returned; suture of side of hernial orifice, including Poupart's ligament	61	C.	Hernia in scar of abscess incised $2\frac{1}{2}$ years previously in right iliac region.

Special Table II.—*Erysipelas cases arising in hospital.*

No.	Sex.	Age.	Disease for which admitted.	Ward.	Residence before attack.	Probable cause of attack.	Month.	Part where eruption appeared.	Interval between cause and eruption.	Duration of attack.	Result.	Remarks.
1	F.	60	Scirrhus of breast	Elizabeth	66 days	—	June	Breast	—	34 days	D.	P.M.—Acute pleurisy and pericarditis; early renal disease; dermoid of ovary.
2	F.	47	Ditto	Alexandra	9 „	—	May	„	—	4 „	D.	Secondary growth in liver; myofibroma of uterus.
3	F.	54	Ditto	Elizabeth	12 „	—	June	„	—	31 „	C.	
4	F.	41	Ditto	„	17 „	—	Jan.	„	—	12 „	C.	
5	F.	55	Ditto	„	12 „	—	Nov.	General	—	16 „	C.	
6	F.	20	Adeno-fibroma of breast	„	16 „	—	June	Breast (wound)	—	17 „	C.	
7	M.	57	Epithelioma of tongue	Albert	13 „	—	July	R. cheek	—	20 „	D.	P.M.—Congestion of lungs.
8	M.	50	Suboccipital neuralgia	Leopold	16 „	—	Oct.	Head	—	11 „	D.	No P.M. Meningitis.
9	M.	43	Scalp wound	Edward	8 „	—	Feb.	„	—	10 „	C.	Relapse on 25th day.
10	M.	27	Ditto	Albert	8 „	—	„	„	—	10 „	C.	
11	F.	46	Ditto	Alexandra	8 „	—	May	„	—	23 „	R.	Left at own request.
12	M.	41	Ditto	Clayton	2 „	—	Dec.	„	—	6 „	C.	
13	M.	27	Ditto	Albert	2 „	—	Nov.	„	—	6 „	C.	
14	M.	37	Cut throat	Clayton	4 „	—	Aug.	Neck	—	1 day	D.	
15	M.	28	Diffuse traumatic aneurysm	Edward	94 „	—	Mar.	Leg	—	14 days	C.	See Special Summary.
16	M.	28	Varicose veins of leg	„	11 „	—	July	„	—	28 „	C.	
17	M.	39	Fistula in ano (sebaceous cyst)	Clayton	16 „	Removal of cyst of face	Aug.	Head	2 days	3 „	C.	
18	M.	57	Fistula in ano	„	6 „	Operation for fistula	Oct.	Perinæum, buttock	1 day	6 „	C.	
19	M.	42	Ditto	„	3 „	Ditto	Nov.	„	1 „	21 „	C.	

20	M.	33	Compound fracture of tibia and fibula	Edward	44 „	—	„	Leg	—	14 „	C.	
21	M.	32	Ditto	Clayton	11 „	—	Jan.	Wound	—	8 „	C.	
22	F.	33	Dorsal caries	Elizabeth	88 „	Sacral bedsore	Feb.	Sacral region	—	22 „	D.	Death from suppurative nephritis.
23	M.	33	Tubercular abscess of ankle	Clayton	80 „	—	Aug.	Ankle	—	—	C.	No temperature. Doubtful case.
24	M.	21	Abscess of thigh	Edward	74 „	Wound irritated by splint	July	L. thigh	2 days	8 days	C.	
25	M.	7	Necrosis of tibia	Victoria	38 „	—	April	Outer side of leg	—	3 „	C.	Temperature raised for only 2 days.
26	M.	33	Ditto	Edward	49 „	Wound probed	„	L. leg	2 days	4 „	C.	
27	M.	15	Ditto	Leopold	154 „	Operation	June	Leg	1 day	—	C.	Followed by suppuration of knee-joint.
28	M.	48	Suppurating bunion	Albert	1 „	—	Jan.	Foot	—	3 days	C.	
29	F.	8	Disease of metatarso-phalangeal joint	Elizabeth	18 „	—	Mar.	Foot and leg	—	3 „	C.	One relapse.
30	M.	57	Extravasation of urine	Albert	4 „	Perinæal incisions	July	Perinæum	4 days	7 „	D.	
31	M.	50	Perinæal abscess	„	1 „	—	Nov.	„	—	3 „	C.	
32	M.	6	Hip disease	Clayton	48 „	—	Mar.	Hip	—	12 „	C.	} Excision.
33	M.	14	Ditto	Leopold	277 „	—	Feb.	—	—	—	C.	
34	M.	6½	Ditto	Clayton	48 „	—	„	Hip	—	15 days	C.	
35	M.	14	Disease of knee-joint	„	20 „	—	„	—	—	5 „	C.	
36	M.	50	Disease of toe-joint	„	72 „	—	Jan.	—	—	28 „	C.	Amputation of toe.
37	M.	28	Genu valgum	Albert	41 „	—	„	Leg	—	12 „	C.	Osteotomy (suppuration).
38	M.	32	Wound over knee	„	4 „	Lacerated wound	Dec.	Thigh	4 days	—	C.	Cellulitis of thigh following wound.
39	M.	6	Wound of ankle-joint	Clayton	15 „	—	Nov.	Leg	—	5 days	C.	
40	F.	51	Burn of legs	Alexandra	4 „	—	„	Foot	—	12 „	C.	
41	M.	37	Osteitis of tibia	Leopold	67 „	—	Feb.	Leg	—	19 „	C.	Got up and walked on leg 3 days before attack.

ABSTRACT SUMMARY. *Sex.*—Males 31, Females 10. *Wards.*—Clayton 12 cases, Albert 8, Elizabeth 7, Edward 6, Leopold 4, Alexandra 3, Victoria 1. 53·8 *per cent.* occurred in Block No. 7.

Season.—In 1st quarter of year 15 cases occurred.
In 2nd „ 8 „

Season.—In 3rd quarter of year 7 cases occurred.
In 4th „ 11 „

SPECIAL TABLE III.—PYÆMIA.

CLASS I. *Admitted as such (excluding bone cases).*

1. Female, æt. 56. Had erysipelas 8 or 9 weeks before admission, after which left knee began to swell; both knees aspirated, 10 oz. pus in left, 2 oz. in right. Death 10th day. P.M.—Pus in both knee-joints; no destruction of cartilage; pus extending up amongst muscles of thigh; no bone disease nor detachment of periosteum; purulent pericarditis; ulcerative endocarditis; lungs hyperæmic, œdematous, no abscesses; other viscera normal.

2. Female, æt. 1 year 9 months. Ill 10 days, "bronchitis;" arm painful and swollen 3 days; no injury, previous history good. On admission signs of rickets, œdema, and bulging over right side of chest, swelling over right shoulder and left knee-joint; temp. 103·2°. Second day shoulder incised, pus external to joint; temperature rose rapidly to 106·8° at death in convulsions on 3rd day. P.M.—Abscess-cavity as above; localised acute empyema; no pus in joints; viscera healthy.

CLASS II. *Acute bone cases.*

Acute epiphysitis—

1. *Multiple.*—Male, æt. 5 months. Eczema capitis 1 month before admission. One day before admission swelling over right shoulder-joint; on day of admission swelling of right knee-joint; aspiration, pus; temp. 100° to 104°. Death 15th day. P.M.—Acute epiphysitis and suppuration of shoulder-joint; acute meningitis; suppuration right knee-joint, cartilage not destroyed.

2. *Hip.*—Male, æt. 11 months. Pain and tenderness left thigh 6 weeks, no injury; abscess incised, suppuration; temp. 99°—102°. Sudden death 7th day. P.M.—Acute epiphysitis head of femur; acute abscess of thigh; acute pericarditis; semi-purulent effusion.

3. *Hip.*—Male, æt. 4. "Typhoid fever" 6 weeks, and 3 weeks before admission pain and swelling right hip. On admission abscess at hip; crepitus on moving femur under anæsthetic, and temp. 102·4°. On 3rd day incision; pus in hip-joint; cartilage destroyed. Death 7th day. No P.M.

4. Male, æt. 9. No injury; ill 5 days; swelling below knees; vomiting. On admission temp. 102°. Incision, pus under periosteum; diarrhœa; temp. 100°—103·6°; parotid bubo 7th day. Death 11th day. P.M.—Acute epiphysitis of upper end of right tibia; pus in knee-joint; acute periostitis left tibia and os calcis; pus in right sterno-clavicular joint; abscesses in lungs and kidneys; multiple ulcers of large intestine, mostly transverse in direction.

5. Female, æt. 6. Ill 3 days; vomiting, delirium, pain lower end of thigh; said to have been kicked 4 days before admission. On admission temp. 102·2°; acute periostitis lower end of both femora. Incision, oily pus; parotid bubo. Death 3rd day. P.M.—Separation of periosteum lower end of femora; no osteomyelitis; broncho-pneumonia; no abscesses; infarcts in kidneys.

6. Male, æt. 11. Fall 4 days before admission. On admission temp. 103°; acute periostitis of tibia; incision, drainage; no relief to symptoms; delirium. Death 2nd day. P.M.—Periosteum detached on postero-internal aspect of tibia up to epiphysial line; no epiphysites or purulent pericarditis and myocarditis; abscess in kidney.

7. Male, æt. 14. Injury to leg 13 days, pain 7 days, and swelling 4 days before admission. Acute periostitis of tibia; temp. 102·8°; collapse; delirium; incision; no relief; 2nd day pericarditis; 3rd day death. P.M.—Separation of periosteum upper four fifths of tibia; pus in knee-joint; no osteitis; suppurative periostitis 2nd left rib, sternal end; small infarcts in lungs; purulent peri- and myo-carditis; general nephritis with small abscesses.

CLASS III. *Cases arising in hospital* (*excluding acute bone cases*).

1. Male, æt. 62. See Special Summary of "Simple Fractures of Tibia and Fibula" (fatal case).

2. Male, æt. 22. See Special Summary, "Arthritis of Hip" (fatal case 1).

3. Female, æt. 46. See Special Summary, "Scirrhus of Breast" (fatal case 3).

4. Male, æt. 28. Admitted with caries of sacrum and gluteal abscess; latter opened spontaneously during administration of anæsthetic for examination; iodoform dressing; copious discharge offensive sanious pus; abscess of thigh opened 10th day; no communication with gluteal abscess; hectic temperature; counter-opening gluteal abscess 20th day; abscess (superficial) over elbow 23rd day; swelling of wrists 23rd day, of knee 27th day; when wrist incised no pus; knee-joint aspirated, 2 oz. thin pus. Death 35th day. P.M.—Abscess cavities as above; pus in right shoulder and knee, and in left sterno-clavicular joint; pleurisy and subpleural hæmorrhages; no metastatic abscesses in viscera.

5. Male 1, æt. 50. Stricture "20 years." Under treatment for retention elsewhere 17 years before admission. No. 1 catheter passed with difficulty by "mitrailleuse" instrument; cystitis; No. 9 passed under anæsthetic; bladder washed out; 41st day rigor, temp. 103°—104°; pain and swelling over shoulder, profuse sweating, delirium. Death 46th day. No P.M.

STATISTICAL REPORT

OF

THE OPHTHALMIC DEPARTMENT

FOR THE YEAR 1888.

By M. H. SPENCER,
LATE OPHTHALMIC CLINICAL ASSISTANT

During the year there were 3778 new out-patients (exclusive of renewed letters). 249 in-patients were admitted, and 281 major operations were performed.

Table of In-patients.

Cataract, senile	36	Irido-choroiditis	2
„ lamellar	3	Syphilitic keratitis (hereditary)	6
„ soft	3	Kerato-iritis	4
„ traumatic	2	Keratitis (causation unknown)	1
„ congenital	1	Pterygium	3
Membrane after extraction	15	Cyclitis	2
Glaucoma, acute	5	Corneal ulcers:	
„ subacute	5	Hypopyon, traumatic, suppurating, and serpiginous	8
„ chronic	9	Chronic, relapsing, &c.	17
„ secondary	3	Conical cornea	1
„ absolute	1	Papillitis	4
„ traumatic	1	Retro-bulbar neuritis	1
Wound of eyeball	23	Primary atrophy	1
Lost eyes	4	Tobacco amblyopia	3
Conjunctivitis	1	Retinitis, syphilitic	1
Granular lids and pannus	7	„ albuminuric	1
Sympathetic inflammation	1	Detachment of retina	2
Iritis, syphilitic (acquired)	2	Hyalitis and hæmorrhage into vitreous	3
„ relapsing	3	Myopia	1
„ serous	1		
„ gonorrhœal rheumatic	2		

Hypermetropia	1
Convergent strabismus	7
Divergent strabismus	4
Blepharospasm	1
Lacrimal abscess and mucocele	6
Trichiasis, ectropion, entropion	15
Wound of lid	1
Intra-ocular sarcoma	1
Rodent ulcer	1
Lupus	1
Strumous ophthalmia	4
Leucoma, with adherent iris	7
Anterior staphyloma	3
Dermoid cyst of eyebrow	2
Primary chancre of lid	1
Sebaceous cysts	2
Hemianopia	1
Ptosis	1
Exophthalmic goitre	1
	249

The following is a list of the chief operations performed:

(*The figures refer to the number of eyes.*)

Removal of cataract		52
Extraction	45	
Suction	1	
Curette evacuation	2	
Needling, for congenital	2	
„ for traumatic	2	
Discission of membrane after extraction		22
Extraction of membrane with forceps		1
Iridectomy		57
For glaucoma, acute	5	
„ „ subacute	5	
„ „ chronic	8	
„ „ secondary	2	
Preliminary to cataract extraction	2	
For prolapse of iris	12	
„ perforating ulcer	1	
„ relapsing iritis	4	
„ anterior synechia	4	
„ artificial pupil	13	
„ irido-cyclitis	1	
For conical cornea		1
Peritomy		3
Cautery to conjunctiva		1
„ to lid		3
„ to cornea		5
„ to lacrimal sac		2
Tenotomy of internal rectus		15
Graefe's	3	
Liebreich's	5	
Critchett's	7	
Tenotomy of external rectus		5
Advancement of internal rectus		10
„ external rectus		4
„ Tenon's capsule		1
For entropion		9
Snellen's operation	3	
Arlt's „	6	
For ectropion		2
Optico-ciliary neurotomy		1
Removal of dermoid cyst		3
Canthoplasty		7
Tattooing of cornea		3
Excision of eyeball		32
Sclerotomy for chronic glaucoma		1
Electrolysis for trichiasis		10
Blepharorraphy		5
Saemisch's section		1
Paracentesis		4
For mucocele		10
For removal of sebaceous cyst		2
For pterygium		3
For lacrimal fistula		1
Extirpation of rodent ulcer		1
Scraping lupus of face		3
„ cornea for lead deposit		1
		281

Analysis of Cataract Operations.

I.—Extraction of hard cataract—40.

The section was made upwards in every case, except No. 1. In No. 1, a myopic eye, a bident was passed behind lens as a first step, the section made downwards, and lens extracted by a sharp hook.

Iridectomy was done at the time of operation in every case, except Nos. 36 and 39, in which it had been done before.

A 2 per cent. hydrochlorate of cocain solution was used as anæsthetic in every case. In No. 1 chloroform was also given.

Atropine was begun on the third day after operation.

II.—Operations for removal of soft cataract—7.

In three cases the incision was made with keratome, in two with Graefe's knife, in one with Taylor's knife, and in one with Beer's knife.

In two cases the lens was removed with syringe; in the rest by the aid of the curette.

Table I.—*Extractions of Hard Cataract*—40.

Mr. Nettleship's Cases (30).

Page in B. 88.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
5	1	H. C. Jan. 13th	M.	63	Cocain and chloroform	Left; myopic eye; a bident was passed behind lens, entering at sclero-corneal junction, emerging two lines behind sclero-corneal junction; incision down with Graefe's knife; iridectomy; capsule opened by cystitome, lens extracted by sharp hook; escape of watery vitreous on incision, more normal vitreous after withdrawal of bident; eye much collapsed	Eye irritable for some time; resulting haze of vitreous or aqueous; high astigmatism	None	April 9th— $\frac{+3\text{ Ds.}}{+6\text{ Dc.}}=\frac{6}{60}$. Reads 8 J. at 4 in.
7A	2	M. H. Jan. 17th	F.	55	Cocain	Right; extraction up with iridectomy	Favorable, but much membrane in pupil	May 11th— Removal of membrane with canula-forceps	Feb. 14th, 1889— $\frac{+11\text{ Ds.}}{+1{\cdot}5\text{ Dc.}}=\frac{6}{9}$ partly. $\frac{+14\text{ Ds.}}{+1{\cdot}5\text{ Dc.}}=1\text{ J.}$
31A	3	M. D. March 2nd	F.	56	„	Right; extraction up with iridectomy; lens translucent, much of it soft	Favorable	Feb. 12th, '89— Needled	Jan. 18th, 1889— +14 D $=\frac{6}{24}$. +16 D. = 12 J.
32	4	J. A. March 2nd	M.	77	„	Left; extraction up with iridectomy; lens over-ripe; cortex hard and chippy; a good deal had to be left at lower part	Much opaque matter in pupil	None	Cannot read, but much improved by +10 D.
32	5	J. A. March 13th	M.	77	„	Right; extraction up with iridectomy; nucleus hard; much gruelly cortex	Some congestion; angles of iridectomy united by pigmented band of membrane	None	Cannot read; improved by +10 D.

52	6	W. P. May 11th	M.	71	„	Right; extraction up with iridectomy; lens very hard	Favorable	July 10th— Needled	July 23rd— $\frac{+11\text{ Ds.}}{+3\text{ Dc.}} = \frac{6}{18}$ partly. $\frac{+14\text{ Ds.}}{+3\text{ Dc.}} = 6$ J.
59	7	R. P. May 25th	F.	72	„	Right; extraction up with iridectomy; lens fairly hard; iridectomy small; outer limb of iris prolapsed, but was replaced	Favorable	Oct. 23rd— Needled	Dec. 10th, 1889— +14 D $= \frac{6}{18}$. +17 D = 2 J.
75	8	S. J. June 15th	F.	68	„	Right; extraction up with iridectomy; wound rather short; cortex sticky; pupil left black	Favorable	None	Aug. 17th— +12 D. $= \frac{6}{12}$. +16 D. = 1 J.
76	9	J. L. June 15th	M.	61	„	Left; extraction up with iridectomy; patient very restless; section very oblique and too corneal; cortex fluid; nucleus hard; he jerked the lens out by squeezing the lids, but no vitreous escaped; possibly a little lens matter left between lips of wound	Suppurated	June 18th— Ether and chloroform; wound cauterised with electric cautery. June 22nd— Excised	—
78	10	E. H. June 22nd	F.	60	„	Right; extraction up with iridectomy; lens white and rather soft	Favorable, but a good deal of opaque matter in pupil	Oct. 12th— Needling attempted, but membrane found too tough; iridectomy down	Aug. 16th— +5 D. $= \frac{6}{24}$. +11 D. = 6 J. at 6 in.
79	11	A. S. June 22nd	F.	75	„	Right; extraction up with iridectomy; lens brown and hard, came away whole	Favorable	June 27th— Needled; did not gape widely	Sept. 11th— $\frac{+10\text{ Ds.}}{+1\text{ Dc.}} = \frac{6}{18}$. $\frac{+16\text{ Ds.}}{+1\text{ Dc.}} = 4$ J.
83A	12	J. A. June 29th	M.	66	„	Left; extraction up with iridectomy; lens hard; came out clean	Mild iritis	Oct. 12th— Needled. Mar. 29th, 1889—Needled	April 8th, 1889— +12 D. $= \frac{6}{24}$.

Page in B. 88.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
84	13	B. N. June 29th	F.	56	Cocain	Left; extraction up with iridectomy; spermaceti cortex; no bleeding into anterior chamber	Favorable	None	July 4th, 1889— $\frac{+\ 11\ \text{Ds.}}{+\ 2{\cdot}5\ \text{Dc.}} = \frac{6}{9}$ partly. $\frac{+\ 13\ \text{Ds.}}{+\ 2{\cdot}5\ \text{Dc.}} = 1$ J.
85	14	M. L. June 29th	F.	72	„	Left; extraction up with iridectomy; lens very flat and shrunken antero-posteriorly, hard; much blood left in anterior chamber	Favorable	None	Nov. 20th— +11 D. $= \frac{6}{12}$ partly. +16 D. = 1 J.
90	15	C. D. July 17th	F.	60	„	Left; extraction up with iridectomy	July 19th— Lid slightly swollen; much chemosis of conjunctiva; cornea hazy; some discharge	July 19th— Ether; wound cauterised deeply; a good deal of vitreous escaped; progressed favorably after operation; cornea cleared a good deal	Sept. 16th— +10 D. $= \frac{6}{36}$. +13 D. = 14 J.
103	16	J. H. Aug. 17th	M.	49	„	Left; extraction up with iridectomy; iridectomy small; lens sticky; probably a good deal of semi-clear cortex left	Favorable	None	Cannot read. Chooses +10 D.
104	17	M. W. Aug. 17th	M.	72	„	Right; extraction up with iridectomy; much soft cortex coaxed out, but some left behind lower limb of iris	Favorable	Oct. 2nd— Needled. Oct. 9th— Needled	Nov. 17th— +10 D. $= \frac{6}{18}$. +14 D. = 1 J.
78	18	E. H. Aug. 17th	F.	60	„	Left; extraction up with iridectomy; much bleeding into anterior chamber; much soft cortex, a good deal of which was squeezed out; blood	Favorable, but much lens matter left, with some blood on it	None	—

113	19	M. F. Aug. 24th	F.	60	„	Right; extraction up with iridectomy; much soft matter, some remaining	Favorable, but much opaque matter in pupil	Oct. 12th—Needled	Nov. 21st— + 8 D. = $<\frac{6}{60}$. +14 D. = 20 J.
116	20	E. B. Aug. 24th	F.	78	„	Left; extraction up with iridectomy; window cut in iris by first incision with Graefe's knife	Favorable	Nov. 29th—Needled	Dec. 5th— +12 D. = $\frac{6}{36}$. +14 D. = 10 J. at 9 in.
124	21	J. W. Sept. 28th	M.	54	„	Left; extraction up with iridectomy	Oct. 9th—Mild iritis, with some congestion. Oct. 30th—Eye quieter, but no red reflex; by focal light a greyish appearance behind capsule, probably result of extensive hæmorrhage into vitreous	None	Barely p. l.
125	22	E. O. Sept. 28th	F.	51	„	Left; extraction up with iridectomy; lens rather soft; some soft matter left behind	Favorable	None	Oct. 11th— +5 D = $<\frac{6}{60}$. +9 D. = 16 J.
129	23	F. C. Oct. 9th	F.	40	„	Right; extraction up with iridectomy; outer limb of iris torn; no attempt made to remove it, as patient was very restless	Oct. 16th—Prolapse of iris at outer angle of wound	Oct. 16th—Ether; iris drawn out at protruding point, and snipped off	Oct. 29th— $<\frac{6}{60}$.
85	24	M. L. Oct. 5th	F.	72	„	Left; extraction up with iridectomy; a little soft matter left	Favorable	None	Nov. 30th— +11 D. = $\frac{6}{12}$ partly. +16 D. = 1 J. well.
138	25	M. H. Oct. 19th	F.	53	„	Left; extraction up with iridectomy; lens small and hard	Favorable	None	Dec. 10th— +13 D. = $\frac{6}{18}$. +18 D. = 2 J. at 7 in.

Page in B. 88.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
146	26	J. T. Nov. 9th	M.	69	Cocain	Left; extraction up with iridectomy; counter-puncture rather too far forward; lens did not present well; cystitome used twice, for opening capsule, and for helping out lens; lens sticky, with large hard nucleus; a little healthy vitreous lost; not cut off by scissors	Fairly quiet; a bead of vitreous protruding from wound	Dec. 21st—Needled	Dec. 28th— +11 D. = $\frac{6}{60}$. +16 D. = 14 J.
7A	27	M. H. Nov. 9th	F.	55	„	Left; extraction up with iridectomy; inner limb of iris pricked with knife, and not cut quite clean with scissors; this part prolapsed, but was well replaced; a little soft matter coaxed out; a little blood left in coloboma	Favorable	Feb. 15th, '89—Needled	Feb. 20th, 1889— $\frac{+11 \text{ Ds.}}{+ 2 \text{ Dc.}} = \frac{6}{18}$. $\frac{+15 \text{ Ds.}}{+ 2 \text{ Dc.}} = 1$ J.
146A	28	E. B. Nov. 9th	F.	66	„	Left; extraction up with iridectomy; cortex gruelly; nucleus firm; all cortex easily coaxed out	Favorable	Jan. 25th, '89—Needled.	Feb. 7th, 1889— +12 D. = $\frac{6}{6}$ partly. +16 D. = 1 J.
148	29	E. B. Nov. 13th	F.	70	„	Left; extraction up with iridectomy; very little lens matter left. (Patient had albumen in urine, enlarged liver, and dilated heart)	Suppurated	Nov. 15th—Solid cocain; wound cauterised deeply. Nov. 18th—Chloroform; eye excised	—
166	30	M. C. Dec. 14th	F.	80	„	Right; extraction up with iridectomy; lens dark brown, almost black in parts	Favorable	None	Cannot read; chooses +13 D. for distance, +15 D. for near vision.

1	31	E. L. Jan. 10th	F.	58	„	Right; extraction upwards; section rather irregular; iris rolled over knife, and a piece was cut off during corneal section; iridectomy done in two pieces; lens cortex very soft, and a good deal removed after nucleus came out; pupil left nearly black. Patient unruly	Favorable	None	June 13th— + 9 D. = $\frac{6}{24}$ partly. +15 D. = 8 J.
2	32	E. W. Jan. 10th	F.	54	„	Left; extraction up with iridectomy; lens came away nearly entire	Remained irritable for a month; several posterior synechiæ	None	April 12th— $\frac{+11 \text{ Ds.}}{+3{\cdot}5 \text{ Dc.}}$ = $\frac{6}{12}$ partly. $\frac{+16 \text{ Ds.}}{+3{\cdot}5 \text{ Dc.}}$ = 1 J.
20	33	J. W. April 13th	F.	60	„	Right; extraction up with iridectomy; lens yellowish, sticky; came out fairly completely; vitreous presented after extraction of lens, but none escaped; eye seemed unusually flaccid after removal of lens	Favorable	Oct. 1st— Needled	Nov. 8th— +13 D. = $\frac{6}{6}$ partly. +18 D. = 1 J.
2	34	E. W. April 17th	F.	54	„	Right; extraction up with iridectomy; iris after withdrawal remained in wound a few moments; a largish piece removed subsequently	Favorable	None	May 14th— +13 D. = $\frac{6}{18}$. +18 D. = 1 J.
26	35	M. B. April 20th	F.	70	„	Right; extraction up with iridectomy; eyeball prominent, and patient not very steady; section more than usually corneal; lens sticky, came out nearly whole; no loss of vitreous	Favorable	None	May 30th— +11 D. = $\frac{6}{24}$. +16 D. = 10 J. partly.

Page in B. 88.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
28	36	A. F. April 26th	F.	65	Cocain	Right; extraction up; an iridectomy up had been done for iritis in Nov., 1886; nucleus came out, leaving a good deal of soft matter, some of which was subsequently removed	Favorable, but pupil full of opaque membrane	June 29th—Attempted iridectomy downwards; no iris got away, but small nearly clear pupil below centre produced	July 12th—Cannot see the types' board. +14 D. = 20 J. Mar., 1889—Pupil blocked.
46	37	J. S. July 24th	M.	69	„	Right; extraction up with iridectomy; lens came away well; a little soft matter left, part of which was removed afterwards by coaxing	Favorable	None	—
121N	38	J. B. Sept. 7th	M.	49	„	Left; extraction up with iridectomy; lens came away slowly, leaving a good deal of opaque matter, some of which was coaxed out	Favorable; slight iritis; two posterior synechiæ	None	Oct. 25th—+10 D. = $\frac{6}{24}$. +14 D. = 16 J.
40	39	C. P. Sept. 25th	M.	54	„	Right; extraction up. Preliminary iridectomy on June 15th. The counter puncture was rather too peripheral; capsule opened at upper edge with knife; a good deal of soft matter removed by pressure afterwards	Favorable	None	Oct. 10th—+12 D. = $\frac{6}{18}$. +16 D. = 2 J. at 12 in. Jan., 1890—V. = < $\frac{6}{60}$ and 20 J.; requires needling.
62	40	J. S. Oct. 5th	M.	66	„	Right; extraction up with iridectomy; section unusually corneal; cataract Morgagnian, and much milky lens matter escaped on opening capsule; nucleus hard and brownish, came out readily	Favorable	None	July 15th, 1889—+12 D. = $\frac{6}{18}$. +18 D. = 6 J.

TABLE II.—*Operations for Removal of Soft Cataract—7.*

Mr. Nettleship's Cases (4).

15	41	J. F. Feb. 3rd	M.	30	Cocain	Right; extraction by simple linear operation with keratome; lens pasty, all removed; iris came into wound, so a small iridectomy was performed. Spermaceti cataract	Favorable	Jan. 25th, '89—A fine capsular membrane needled	April 18th, 1889— $\frac{+14\ \text{Ds.}}{+\ 1\ \text{Dc.}} = \frac{6}{9}$ $\frac{+18\ \text{Ds.}}{+\ 1\ \text{Dc.}} = 1\ \text{J.}$
22	42	F. B. Feb. 24th	M.	8	Ether	Right; incision with keratome; about half lens matter removed with Bowman's syringe, the remainder not opaque. Needled on Feb. 21st. Lamellar	Favorable	March 29th—Needled	—
58	43	A. H. May 25th	F.	33	Cocain	Left; extraction up without iridectomy; some lens matter left behind	Tendency to prolapse of iris	May 29th—Ether; wound reopened; adherent iris drawn out and removed	Operation done for sake of appearance.
133	44	S. M. Oct. 12th	F.	28	„	Right; extraction up without iridectomy; all lens matter came away; no prolapse of iris	Favorable	None	Operation done for sake of appearance.

Mr. Lawford's Cases (3).

21	45	W. H. April 16th	M.	51	Ether and chloroform	Left; traumatic cataract; incision at upper margin of cornea with Beer's knife; iridectomy; opaque lens matter removed	Favorable; a a good deal of opaque lens matter left to absorb	None	Oct. 1st.—Still much opaque matter in lens.

Page in B. 86.	Report No.	Name and date.	Sex.	Age.	Anæsthetic.	Operation.	Progress of case.	Secondary operation.	Result.
23	46	E. W. April 24th	F.	7	Cocain	Right; corneal incision at temporal side with Taylor's knife; lens matter sticky, and only small quantity escaped. Freely needled on April 20th. Lamellar	Favorable; on June 11th nearly all lens matter absorbed	None	Sept. 18th, 1889— $+13$ D. $= \frac{6}{24}$.
60	47	W. T. Oct. 5th	M.	12	,,	Left; incision up with keratome; some lens matter escaped, but a considerable amount removed by syringe, into which it came readily; pupil left nearly black. Needled freely on Oct. 2nd. Lamellar	Favorable	None	June 24th, 1889— $+9$ D. $= \frac{6}{18}$. $+13$ D. $= 1$ J.

PRINTED BY ADLARD AND SON BARTHOLOMEW CLOSE.

Notice of Alteration in the Subjects to be taken in 1890.

OPEN SCHOLARSHIPS IN NATURAL SCIENCE.

As an inducement to the study of Natural Science before the commencement of the strictly Medical Course, two Scholarships, of the value of 125 Guineas (*i.e.*, a free admission) and £60 respectively, are awarded annually, after an examination in Physics, Chemistry, and either Botany, Zoology or Physiology, at the option of Candidates. The standard, so far as the subjects are the same, will be that of the Preliminary Scientific Examination for Honours of the University of London.

These Scholarships are open to all Students who have passed a recognised Preliminary Examination in Arts, and have not yet attended Lectures on Anatomy of the first year, without any condition as to their becoming Students of the Hospital, except in the case of successful Candidates, who must enter at once as "Perpetual" Pupils. Chemistry and Physics are compulsory subjects for this Examination, and Candidates must take up one of the other subjects. The Examination will be conducted by means of written papers and practical work, and will be held during the last week in September, 1890. The names of Competitors with Certificate of Preliminary Examination must be sent to the Secretary not later than September 17th.

St. Thomas's Hospital

MEDICAL SCHOOL.

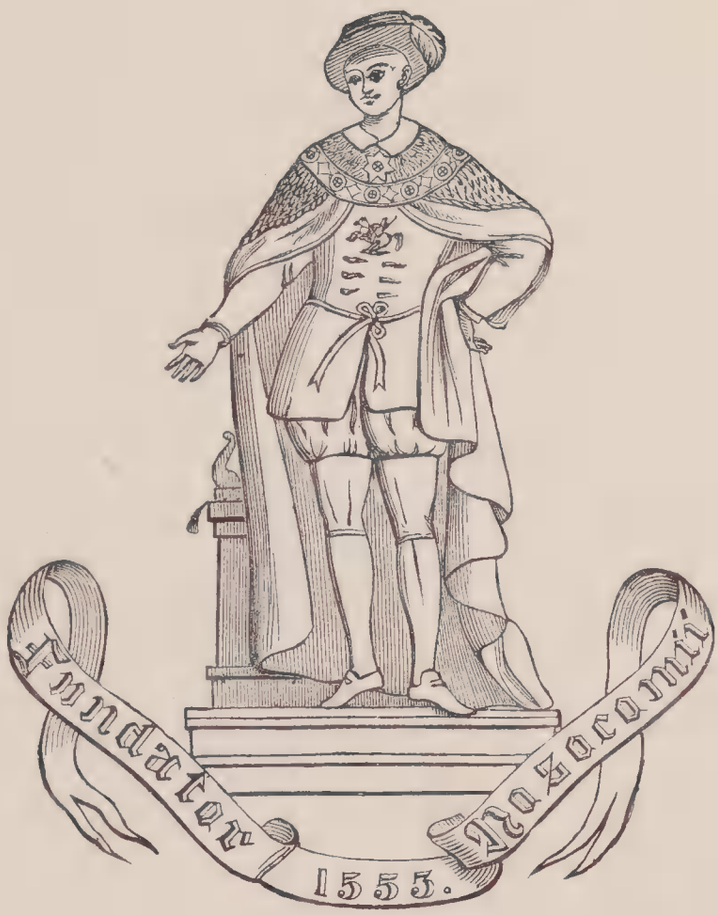
CALENDAR

AND

PROSPECTUS

FOR THE

YEAR COMMENCING OCTOBER 1ST, 1889.



1889 & 1890.

LONDON:

PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,

STAMFORD STREET AND CHARING CROSS.

TABLE OF CONTENTS.

	PAGE
Winter and Summer Sessions	5
Introductory Address...	5
Annual Dinner	5
Historical Notice of the Hospital and School ...	5–15
General Description of the Hospital and School ...	15
Number of Patients	16
Nightingale Training School	16
Medical and Surgical Officers and Lecturers ...	17, 18
Lectures and Demonstrations	19
Tables of Days and Hours of Attendance ...	20, 21, 22
Special Departments	22, 23
Suggestions to Students	24, 25
Fees	26, 27
Classes for London University Examinations ...	28, 29
Entrance and other Scholarships, Prizes and Appointments	29–32
Regulations for Examination and Classification of Students	32
Prize Lists	33–35
Museum	36, 37, 38
Medical and Physical Society	39
St. Thomas's Hospital Reports	40
Calendar	41–54
List of Students who have obtained Honours ...	55–72

MEDICAL SCHOOL.

For information on all matters relating to the Medical School, Prizes, Scholarships, &c., application should be made to the Medical Secretary, Mr. G. RENDLE, at the Hospital, Albert Embankment, S.E., personally (10 to 4, Saturday 10 to 1) or by letter.

A Register of LODGINGS suitable for Students has been recently revised, and is kept in the Secretary's Office. Information as to terms, accommodation, &c., can be obtained on application. This Register has been especially prepared with a view to the convenience of new Students for whose accommodation in lodgings or otherwise no definite arrangements have been made.

Medical Practitioners, Clergymen, and Private Families residing in the neighbourhood receive Students for residence and supervision.

STUDENTS' CLUB.

For the convenience of Students, a Club has been established in the Medical School Building. The Club premises comprise a Dining Room, where between 9 a.m. and 6 p.m. refreshments can be obtained at reasonable prices; and a Reading and Smoking Room supplied with most of the daily and illustrated weekly papers.

There is no Annual Subscription, but Students who join in their 1st year pay £1 1s. for permanent membership; those joining in their 2nd year, 10s. 6d.; and those of later years 5s. The fees are received by the Secretary of the Club, Mr. G. S. SAUNDERS, Librarian.

The Club can be used only by Members.

THE ST. THOMAS'S HOSPITAL AMALGAMATED ATHLETIC CLUBS.

Students wishing to join the Athletic, Cricket, Rugby and Association Football, Cross Country, Rifle, Rowing, or Tennis Clubs, can do so by becoming subscribers to the Amalgamated Athletic Clubs. Annual Subscription, 12s. 6d. Composition Fee, £2 2s.

Particulars can be obtained from the Treasurer, Mr. G. S. SAUNDERS.

St. Thomas's Hospital

MEDICAL SCHOOL.

The WINTER SESSION 1889 – 90 will commence on TUESDAY, OCTOBER 1st, and terminate on MARCH 31st.

The SUMMER SESSION will begin on MAY 1st, and terminate on JULY 31st.

An Introductory Address will be given in one of the Theatres of the Hospital by

WILLIAM ANDERSON, ESQ., F.R.C.S.

on TUESDAY, October 1st, at 3 P.M., after which the various Departments of the Hospital and School will be thrown open in working order for the inspection of Visitors.

Refreshments will be provided in the Library.

The Annual Dinner, in which all former and present Students are invited to join, will take place the same evening in the Governors' Hall, at 6 for 6.30, JOHN HARLEY, M.D., in the Chair.

The Annual Distribution of Prizes will be made during the Summer Session.

THE first hospital of St. Thomas, within the precincts of the Priory of St. Mary Overie, being destroyed by fire in the year 1207, the prior and convent erected in the same year near the site of their house a temporary hospital. This building was in the emergency used for religious purposes; mass was said there until the priory was rebuilt. In 1228 Peter de Rupibus, Bishop of Winchester, built the Hospital of St. Mary or St. Thomas, Overie, on the opposite or eastern side of the highway, on land provided by Amicius, Archdeacon of Surrey, and dedicated it to St. Thomas the Martyr.

The following is a translation of the "charter" of 1228:—

"The Lord Peter's charter of indulgence for twenty days granted by him for this hospital.

"Peter, by the grace of God Bishop of Winchester, to

all the faithful in Christ in the diocese of Winchester, greeting. In Him who is the salvation of the faithful. As saith the Apostle, bodily discipline which consists in fasts, vigils, and other mortifications of the flesh, profiteth little, while piety availeth for all things, having the promise of the life which now is, and of that which is to come.

"Our Lord Jesus Christ among the works of piety enumerates, commends, and teaches us to fulfil six, as though more praiseworthy and more meritorious than the rest, saying, 'I was an hungred, and ye gave Me to eat; I was thirsty, and ye gave Me to drink; I was a stranger, and ye took Me in; I was naked, and ye clothed Me; I was sick, and ye visited Me; in prison, and ye came to Me. To them that perform these works of piety He shall grant His blessing and the glory of His heavenly kingdom, saying, 'Come, ye blessed of My Father, receive the kingdom which has been prepared for you from the beginning of the world.' But to them that neglect and do not perform works of compassion He threatens His curse and the penalty of eternal fire, saying, 'Go, ye cursed, into eternal fire, which has been prepared for the devil and his angels.' It is therefore to be borne in mind, my dearest sons, and more deeply laid to heart, how needful and how conducive to the salvation of our souls it is to exercise more readily those works of piety whereby blessing is promised to us, and the felicity of eternal life is gained.

"Behold at Southwark an ancient hospital, built of old to entertain the poor, has been entirely reduced to cinders and ashes by a lamentable fire. Moreover, the place wherein the old hospital had been founded was less suitable, less appropriate for entertainment and habitation, both by reason of the straitness of the place, and by reason of the lack of water and of many other conveniences: according to the advice of us, and of wise men, it is transferred and transplanted to another more commodious site, where the air is more pure and calm, and the supply of waters more plentiful. But whereas this building of the new hospital calls for many and manifold outlays, and cannot be crowned

with its due consummation without the aid of the faithful, we request, advise, and earnestly exhort you all, and with a view to the remission of your sins enjoin you, according to your abilities, from the goods bestowed on you by God, to stretch forth the hand of pity to the building of this new hospital, and out of your feelings of charity to receive the messengers of the same hospital coming to you for the needs of the poor to be therein entertained, that for these and other works of piety you shall do, you may, after the course of this life, reap the reward of eternal felicity from Him who is the Recompenser of all good deeds, and the loving and compassionate God. Now we, by the mercy of God, and trusting in the merits of the glorious Virgin Mary, and the Apostles Peter and Paul, and St. Thomas the Martyr, and St. Swithin, to all the believers in Christ, who shall look with the eye of piety on the gifts of their alms—that is to say, having confessed, contrite in heart and truly penitent, we remit to such twenty days of the penance enjoined on them, and grant it to them to share in the prayers and benefactions made in the church of Winchester, and other churches erected by the grace of the Lord in the diocese of Winchester. Ever in the Lord; Farewell."

The Bishop of Winchester or the Archbishop seems to have granted, in 1277, to the Brethren power to elect their own Master; in a visitation, 1323, they are ordered to follow the rule of St. Augustine—the rule of the parent house—in obedience, chastity, renunciation of individual property, and the Master to eat with the Brethren.

In 1417 the Master and Brethren formed a Court of themselves, and exercised authority within the precincts of the Hospital over persons regular or secular, and in cases civil or even criminal.

The Hospital, built in 1228, had by 1507 become dilapidated and insufficient; great efforts were then made to rebuild and enlarge it.

In the Duchy of Lancaster records there is "the Rentall of Thomas Becketts hospitall in Southwarke, of all the lands and tenements belonging to the hospitall." It

contains the names of the tenants and the rents paid; it is without date, but from internal evidence must be early in the sixteenth century.

Within the precincts of the hospital was the renowned printing press of James Nycolson, who, in 1527, signed the contract for the painted windows of King's College, Cambridge, as "James Nycolson, of St. Thomas's Spyttell in Southwark." The most remarkable issue from this press was the first English Bible printed in England, inscribed thus—'Imprynted in Southwarke in St. Thomas Hospitale by James Nycolson. Dedicated by M. Coverdale to the King 1537."

About this time there were a Master, Brethren, and three Lay Sisters; forty beds were made up for poor, infirm, and impotent people, who were supplied with victuals and firing.

In the year 1535, Henry VIII. was excommunicated by Pope Paul III., and, declaring himself head of the church, proceeded to dissolve the Catholic houses, whose large revenues went to the Crown. There seem to have been 645 monasteries and abbeys thus treated, twenty-eight of which had abbots with seats in Parliament, ninety colleges and free chapels, and 110 hospitals of various descriptions. It is certainly in favour of the sweeping change that so able and honest a man as Sir Richard Gresham, the Lord Mayor of London, should have put his hand to the following petition to the King:

"Most redowted, puysant, and noble Prince * * * *—Lere and within the cytie of London be iij hospitalls or spytells commonly called Seynt Georges Spytell, Seynt Barthilmews Spytell, and Seynt Thomas Spytell, and the new Abbey of Tower Hill, founded of good devotion by auncient fathers, and endowed with great possessions and rents only for the reliefe, comforte, and helping of the poore and impotent people lying in every street, offending every clene persone passing by the way with theyre fylthy and nasty savors. Wherefore may it please your merciful goodness, enclyned to pytie and compassion, for the reliffe of Xts very images, created to his own similitude, to order by your high authoritie, as supreme head of this Church of England, or otherwise by your sage discretion, that your mayer of your cytie of London,

and his brethren the aldermen for the time being, shall and may from henceforth have the order, disposition, rule and governaunce both of all the lands, tenements, and revenues apperteynyng and belongyn to the said Hospitals, governors of them, and of the ministers which be or shall be withyn any of them, and then your grace shall facilie perceyve that where now a small number of Chanons, Priests, and Monkes be founde for theyr own profitt only, and not for the common utilitie of the realme, a great number of poore, needy, syke and indugent persones shall be refreshed, maynteyned, and comforted; and also healed and cured of their infermities frankly and freely by physicions, surgeons and potycaries, which shall have stipende and salarie only for that purpose; so that all impotent persones not able to labour shall be releved, and all sturdy beggars not willing to labour shall be punished."

St. Thomas's Hospital being claimed by the King as Church property, was surrendered to him by Thomas Thirleby, the then master, on the 15th July, 1538. It was called St. Thomas à Becket's Spittil. Its yearly revenue was estimated at £266 17*s.* 6*d.*, and an annual pension of 5*s.* 8*d.* was payable by the master, and another of 2*s.* 1*d.* by the curate, to the Archdeacon of Surrey. Soon after the seizure, we find that the Citizens of London purchased of the Crown some of its landed estates, producing about £160 yearly. The want of the hospital thus destroyed was felt immediately. Wounded soldiers from the army in France, and the sick poor in general were without provision or help, and Henry proposed granting to the City the Mansion house of St. Bartholomew's, the dissolved house of Grey Friars adjoining, and the unoccupied fabric of St. Thomas's Hospital. The latter was intended by Henry to receive the name of the Hospital of the Holy Trinity, and to be allotted exclusively to lame, wounded, and diseased soldiers. The monastery of Grey Friars was to be for the education and maintenance of fatherless children and those of poor parents. The intentions of Henry were overtaken by death, but not before he had conferred upon the Citizens of London the Hospital of St Bartholomew's and also that of Bethlem for lunatics.

It is from the death of Henry that the connection of St. Thomas's Hospital with the city of London appears to begin. To meet the needs of the sick and destitute who had before depended on the charity of the religious houses, a Committee or Board of Inquiry was instituted by the Citizens, with the sanction of King Edward. About 2,100 souls were reported as fit recipients of relief, as fatherless children and invalids, or as "Idle rogues of both sexes who were levying contributions on public sympathy by feigned tales of sorrow." It was proposed to establish receptacles for each class in the unoccupied monastic buildings, and a pecuniary contribution was set on foot to complete the work. They bought the dissolved house of the Franciscans or Grey Friars near St. Bartholomew's Hospital, and also by charter from the King received a grant as follows: "That the said mayor, commonalty, and citizens, and their successors, may have and enjoy all the franchises, immunities, and privileges whatever, which any Archbishop of Canterbury, and which the said Charles late Duke of Suffolk, or any master, brethren, or sisters of the late Hospital of St. Thomas in Southwark aforesaid; or any Abbot of the said monastery of St. Saviour, Saint Mary Bermondsey, next Southwark aforesaid, or any prior and convent of the priory of St. Mary Overie, ever had or enjoyed, or which we hold or enjoy, or our most dear father Henry the VIIIth, late King of England, or had enjoyed, or ought to have, hold, and enjoy the same: and that none of our heirs or successors may intermeddle with this our grant."

The Greyfriars became Christ's Hospital, and the Southwark site the Hospital of the Holy Trinity or St. Thomas's. The Lord Mayor and certain citizens then met on the 6th of October, 1552, and constituted themselves by royal permission governors of the hospitals, and almoners of the money collected. The Hospital of the Holy Trinity they named, in compliment to Edward, the "King's Hospital," and ordained it to receive 260 "wounded soldiers, blind, maimed, sick, and helpless objects."

They also directed that 380 children should be received into Christ's Hospital.

To complete the scheme, the old palace of Bridewell, in Blackfriars, where the Emperor Charles V. had lodged in 1522, when on a visit to Henry VIII., and where subsequently Wolsey had lived, was granted to the City by Edward as a house of correction for dissolute persons and idle apprentices, and for the temporary maintenance of distressed vagrants.

Lastly, the lands lately belonging to the Palace of the Savoy were conferred jointly on the three foundations; and a month only before the end of Edward's short reign, he incorporated by a second charter bearing date the 6th of June, 1553, the Lord Mayor and commonalty of the City of London in succession as perpetual governors of Saint Bartholomew's, Christ's, Bridewell, and the king's Hospital (which last received the name of ST. THOMAS THE APOSTLE), and secured to them the possession of all the estates and revenues appertaining to them by previous deeds of gift. So were the royal hospitals founded.

In 1557 the laws were framed and printed under the name of "The Order of the Hospitalls of K. Henry the VIII. and K. Edward the VI., viz. St. Bartholomew's, Christ's, Bridewell, St. Thomas's. By the Maior, Cominaltie, and Citizens of London," &c.

Successive bequests and donations continued to augment the property of the charities, but during the reigns of Elizabeth, James I., Charles I., and the Protectorate, there appear few facts to note. In the abstract of the charter of confirmation granted to the City in 1663 by Charles II. on his restoration, we find the charter of Edward acknowledged and confirmed. The Great Fire of London in 1666 injured St. Thomas's in its revenues only; and a fire in Southwark anno 1676, ceased, "as if by divine interposition," at the Hospital, probably a strong and isolated block of building. Shortly after this, however, it was found necessary to rebuild the fabric, and in 1693 subscriptions were opened for this purpose. A long list of benefactions in this and the succeeding year, amounting in all to £37,769 3*s*., is given by Golding, who especially singles out Sir Robert Clayton for eulogium. The statue then erected to him, and still extant,

was originally dated 1701, but this was altered on his death to 1714. He was the founder of the old square in which it stood, replacing what Golding terms "a low swampy structure of the monastic order." In 1707, Mr. Guy, founder of the neighbouring hospital, erected three wards at his own charge. In 1717, the back block of buildings adjoining Guy's Hospital was added. With the exception of the two large blocks forming the Borough frontage, the north wing erected in 1833, and the south wing in 1839, the fabric seems to have remained unchanged until its purchase by the railway. In the centre of the front quadrangle stood the brass statue of King Edward, by Scheemakers, erected first in 1737, in pursuance of the will of Charles Joye, some time treasurer of the Hospital. It now stands in the grounds of the New Hospital.

It is a matter of more difficulty to trace the early history of the medical school in connection with the hospital. For the facts which follow we are indebted to the late R. G. Whitfield, Esq., who, from the long period during which his family had been associated with this foundation, was perhaps more qualified to speak than any other person.

The earliest mention in the hospital books of an apprentice is on December 31st, 1561. It is not until 1702 that a law is met with precluding pupils or surgeons from dissecting the dead body without permission from the treasurer.

In 1703 the grand committee resolved that no surgeon should have more than three "Cubbs," a term altered in 1758 to that of "Dressers." Besides these there were also apprentices to the surgeons of the hospital, and ordinary pupils. The first mention of lectures occurs soon after the appointment of Wm. Cheselden, in 1718. These he at first gave at his own house, but afterwards by permission in the hospital. They were on anatomy and surgery. In 1723 a regular registry was ordered to be kept by the apothecary, of pupils entering to surgical practice. In 1725, Guy's Hospital was opened for the reception of patients. In 1751 the assistant-physician was allowed to take two pupils for his own benefit. In 1768, an additional surgeon, Mr. Joseph Else, was elected to read lectures to the pupils.

The students of Guy's Hospital had by courtesy been allowed to attend the operations, and a similar favour admitted the St. Thomas's men to those at Guy's. But on the 8th November, 1768, it was formally resolved that the pupils of each hospital have the liberty of attending not only the operations, but surgical practice, and the money to be divided between the six surgeons and two apothecaries. Hence the appellation of the "United Hospital"; an amalgamation never extended beyond the surgical practice.

To Mr. Else is due the foundation of a regular anatomical school. Mr. Cline, who in 1781 was appointed to read lectures conjointly with Mr. Else, was mainly instrumental in bringing it to its greatest celebrity. At Mr. Else's death, Mr. Cline purchased the collection of preparations made by him and Mr. Girle, a former surgeon, which are now in the hospital museum, and became sole lecturer on anatomy. In 1788 he also became surgeon to the hospital. Mr., afterwards Sir Astley, Cooper was apprenticed to Mr. Cline in 1784, and before his election, as one of the surgeons to Guy's Hospital in 1800, was joint lecturer with his teacher on anatomy and surgery. They both added materially to the pathological museum.

In 1812 Mr. Henry Cline was elected surgeon to St. Thomas's Hospital on his father's resignation, and carried on the anatomical lectures conjointly with Astley Cooper. In 1813 a new anatomical theatre and museum were built, the hospital giving £3000 for the purpose, and the two lecturers £1000 each. In 1815 Mr. Benj. Travers, an apprentice of Astley Cooper's at Guy's, was elected surgeon, according to the established rule which gave the vacancy to the senior apprentice of either institution. Mr. Travers joined in the lectures, devoting his attention specially to ophthalmic surgery. In 1820 Mr. Joseph Henry Green was elected surgeon on the death of his cousin Mr. Hy. Cline, having been apprenticed to his uncle Mr. Cline in the year 1809. From 1820 to 1825 he lectured with Astley Cooper. At this period all the branches of medical study,—viz., medicine, chemistry, materia medica, midwifery, botany, and physiology

—were lectured on at Guy's Hospital, and no physician of St. Thomas's was allowed to share them.

In 1824 Sir A. Cooper resigned the surgical chair, and Mr. C. Aston Key, his apprentice and nephew by marriage, joined Mr. Green in the office. Mr. Frederick Tyrrell, standing in exactly the same relation to Cooper, received permission to lecture on diseases of the eye. In the following year Cooper showed signs of cerebral disturbance, and the family desired that his nephew, Mr. Bransby Cooper, should be his successor. But the claims of Mr. John Flint South were considered superior, and he was appointed. From this cause the "United Hospitals" were severed, and a complete school set up in both. The majority of the students clung to Guy's, where the prestige of the great Sir Astley was still strong; and St. Thomas's school began to sink. The establishment of the Aldersgate Street private school under Tyrrell and Lawrence materially aided in this declension, as did also the secession of Dr. Elliotson to the newly-established University College, and the foundation of a fresh school at King's College, where for a time the surgical lectures were given by Mr. Joseph Henry Green, although a surgeon of St. Thomas's.

Owing to the unprosperous state of affairs in 1842, the Governors came forward to reorganize the school, and the aid of Mr. R. D. Grainger, whose popularity had been established in the Webb Street private school, was obtained. Mr. Joseph H. Green also rejoined the school; and Dr. Marshall Hall, Dr. Hodgkin, Dr. Martin Barry, Dr. Gregory, and Mr. Benjamin Travers contributed to its efficiency. This state of affairs continued until 1858, when the Governors gave back the management, and its attendant risks, into the hands of the lecturers.

For some years it was maintained with difficulty, and much self-sacrifice on the part of the staff, during what may be termed a transitional period, in the hope, now realized, of its once more developing into an institution worthy of its old traditionary glories.

From its foundation down to the year 1862, the Hospital

occupied the original site near London Bridge, but in that year the property was sold for the extension of the railway accommodation, and the establishment temporarily removed to the Surrey Gardens, where it was carried on till the Summer of 1871. In 1868 the first stone of the new Hospital at Westminster Bridge was laid by the Queen, and the completed building was opened by Her Majesty in 1871. In September the patients were first admitted into the new Hospital, and the Medical School was opened on October the 2nd.

The original Hospital latterly contained 500 beds. The present building contains in all 572 beds. It consists of six blocks appropriated to the reception of patients; with one for the administrative and other offices, and one for the Medical School. The Ward blocks, though connected by corridors, stand apart, so as to afford free exposure in all directions. The Wards, with the exception of four which are placed on the ground floor, occupy the first, second, and third floors. Generally, each Ward affords accommodation for 28 beds, which are placed against the piers between the windows, so as to secure thorough ventilation. In a small Ward annexed to each larger Ward, there are two beds for cases requiring special care or treatment.

Of the whole accommodation of the Hospital, about 180 beds are appropriated to ordinary Medical cases, and 230 to ordinary Surgical cases. There are also special Wards for the reception of diseases peculiar to women; for diseases of the eye; for venereal affections; and for children under six years of age. In one of the blocks, separated from the rest of the establishment, there are Wards for infectious diseases.

The space provided for each bed in the ordinary Wards is upwards of 1,800 cubic feet, and in the block appropriated to infectious diseases, about 2,500 cubic feet.

The Out-patients' Department is extensive and well arranged, and every facility is afforded for the treatment of different forms of Medical and Surgical casualties and diseases.

During the twelve months ending December 31st, 1888, the number of patients admitted into the Hospital amounted

to 4,678. In the same period, 25,913 Out-patients have been treated, and in the Maternity department 1,924 women have been attended at their own homes. Casualties, to the number of 65,948 attendances, were treated during the same period.

The School buildings stand at the southern extremity of the Hospital, from which they are quite isolated. They contain ample accommodation for large classes of students.

The Museum is one of the most important in the metropolis. There is a large Reading Room and Library for the use of the pupils.

In addition to these are the various Lecture Rooms, the Dissecting Rooms, the Laboratories for Practical Physiology and for Practical Chemistry, and the Post-mortem Rooms.

The Committee of the "NIGHTINGALE FUND" have arrangements with the authorities of St. Thomas's for educating Women as Hospital Nurses. On the satisfactory completion of one year's training, they will be required to enter into service as Nurses in the Metropolitan or Provincial Hospitals or Infirmaries. A limited number of gentlewomen can be admitted under special agreements to this course of training, with a view to qualify themselves for superior appointments.

The Regulations as to the admission of Candidates may be obtained by writing to Henry Bonham-Carter, Esq., the Secretary of the Nightingale Fund, 5, Hyde Park Square, London, W.

Institutions requiring trained Superintendents or Nurses are requested to apply to the Secretary of the Nightingale Fund, or to Miss A. L. Pringle, the Matron of the Hospital, giving as long previous notice as possible of their requirements.

Women wishing to be trained should, whenever it is possible, make personal application to Miss Pringle, to be entered on the list of Candidates, for admission as vacancies occur.

MEDICAL OFFICERS, LECTURERS, &c.,
OF
ST. THOMAS'S HOSPITAL
AND
MEDICAL SCHOOL.

CONSULTING PHYSICIANS.

T. A. Barker, M.D. Cantab. et Edin. 109, Gloucester Place, Portman [Square, W.
Sir J. Risdon Bennett, M.D. Edin., F.R.S. 22, Cavendish Square, W.

CONSULTING OBSTETRIC PHYSICIAN.

H. Gervis, M.D. Lond. .. .. .. 40, Harley Street, W.

CONSULTING SURGEONS.

F. Le Gros Clark, Esq., F.R.S. .. Sevenoaks, Kent.
Sir John Simon, K.C.B., Hon. M.D. Dublin, F.R.S., D.C.L. .. .. .. 40, Kensington Square, W.

CONSULTING OPHTHALMIC SURGEON.

R. Liebreich, Esq. .. .. 11, Boulevard Clichy, Paris.

PHYSICIANS.

J. S. Bristowe, M.D. Lond., LL.D., F.R.S. 13, Old Burlington Street, W.
W. H. Stone, M.A., M.B. Oxon. 24, Geraldine Road, Wandsworth, S.W.
W. M. Ord, M.D. Lond. .. .. .. 37, Upper Brook Street, W.
John Harley, M.D. Lond. .. .. .. 9, Stratford Place, W.
J. F. Payne, M.D. Oxon. .. (Hon.) .. 78, Wimpole Street, W.

OBSTETRIC PHYSICIAN.

C. J. Cullingworth, M.D. .. .. .. 46, Brook Street, W.

SURGEONS.

Sydney Jones, Esq., M.B. Lond. .. 16, George St., Hanover Sq., W.
John Croft, Esq. .. .. 48, Brook St., Grosvenor Sq., W.
Sir William Mac Cormac, M.A., D.Sc. M. Ch. Hon. Caus. .. .. 13, Harley Street, W.
A. O. Mac Kellar, Esq., M. Ch. .. 7, Cavendish Place, Cavendish [Square, W.

OPHTHALMIC SURGEON.

E. Nettleship, Esq. .. .. 5, Wimpole Street, W.

ASSISTANT PHYSICIANS.

Seymour J. Sharkey, M.A., M.D. Oxon. 2, Portland Place, W.
George Gulliver, M.A., M.B. Oxon. 16, Welbeck Street, W.
W. B. Hadden, M.D. Lond. .. .. 21, Welbeck Street, W.
T. D. Acland, M.A., M.D. Oxon. .. 7, Brook Street, W.

ASSISTANT OBSTETRIC PHYSICIAN.

R. Cory, M.A., M.D. Cantab. .. .. 73, Lambeth Palace Road, S.E.

ASSISTANT PHYSICIAN FOR DISEASES OF THROAT.

F. Semon, M.D. Berlin .. .. .. 39, Wimpole Street, W.

ASSISTANT SURGEONS.

H. H. Clutton, Esq., M.A. Cantab. 2, Portland Place, W.
W. Anderson, Esq. .. .. 25, Grosvenor Road, S.W.
B. Pitts, Esq., M.A., M.C. Cantab. 31, Harley Street, W.
G. H. Makins, Esq. .. .. 2, Queen Street, Mayfair, W.

MEDICAL OFFICERS, &c.—*continued.*

ASSISTANT OPHTHALMIC SURGEON.

J. B. Lawford, Esq. .. .. .. 55, Queen Anne Street, W.

ASSISTANT SURGEON FOR DISEASES OF THE EAR.

C. A. Ballance, Esq., M.S. Lond. .. 56, Harley Street, W.

DENTAL SURGEON.

C. E. Truman, Esq., M.A. Cantab. .. 23, Old Burlington Street, W.

RESIDENT ASSISTANT PHYSICIAN.

H. P. Hawkins, M.A., M.B. Oxon. .. St. Thomas's Hospital, S.E.

RESIDENT ASSISTANT SURGEON.

H. B. Robinson, M.D., B.S. Lond. .. St. Thomas's Hospital, S.E.

ANÆSTHETISTS.

Walter Tyrrell, Esq. .. .. .. 95, Cromwell Road, S.W.
E. F. White, Esq., F.R.C.S. .. .. 7, Dealtry Road, Putney, S.W.

ELECTRICIAN.

W. J. Kilner, B.A., M.B. Cantab. .. 57, Queen Anne Street, W.

PHARMACEUTIST.

Edmund White, Esq. .. .. St. Thomas's Hospital, S.E.

DEMONSTRATORS OF MORBID ANATOMY.

S. J. Sharkey, M.A., M.D. Oxon. .. 2, Portland Place, W.
W. B. Hadden, M.D. Lond. .. .. 21, Welbeck Street, W.
G. Gulliver, M.A., M.B. Oxon. .. 16, Welbeck Street, W.

ANALYTICAL CHEMIST.

Albert J. Bernays, Ph.D., F.C.S., F.I.C. Acre House, 2, Brixton Hill, S.W.

LECTURERS.

A. W. Bennett, Esq., M.A., B.Sc. Lond., F.L.S. — 6, Park Village East, Regent's Park, N.W.
T. Cranstoun Charles, M.D. .. .. — Albert Mansions, 108, Victoria Street, S.W.
H. Rayner, M.D. .. .. — Hanwell, W.
R. W. Reid, Esq., C.M., F.R.C.S. .. — 77, Lambeth Palace Road, S.E.
Edward Seaton, M.D. Lond. .. .. — 35, George St., Hanover Square, W.
S. G. Shattock, Esq., F.R.C.S. .. .. — 4, Crescent Road, Wimbledon.
C. S. Sherrington, M.A., M.B. Cantab. — 75, Lambeth Palace Road, S.E.

REGISTRARS.

Medical—H. W. G. Mackenzie, M.A., M.B. Cantab. *Surgical*—E. Solly, M.B. Lond., F.R.C.S.

CURATOR OF THE MUSEUM.

S. G. Shattock, Esq., F.R.C.S.

LIBRARIAN.

George S. Saunders, Esq.

DEAN OF THE SCHOOL.

E. Nettleship, Esq. .. .. .. 5, Wimpole Street, W.

SECRETARY TO THE SCHOOL.

George Rendle, Esq., M.R.C.S. .. Egerton House, Forest Hill, S.E.

LECTURES AND DEMONSTRATIONS.

LECTURERS.

Medicine	Dr. Bristowe. Dr. Ord.
Clinical Medicine	Dr. Bristowe. Dr. Stone. Dr. Ord. Dr. Harley. Dr. Payne.
Do. *Obstetric*	Dr. Cullingworth.
Surgery	Mr. Sydney Jones. Sir William Mac Cormac.
Clinical Surgery	Mr. Sydney Jones. Mr. Croft. Sir William Mac Cormac. Mr. Mac Kellar.
Do. *Special Course* ..	Mr. Croft.
Descriptive Anatomy	Mr. Reid. Mr. Anderson.
General Anatomy and Physiology ..	Dr. Sherrington.
Practical Physiology	Dr. T. Cranstoun Charles.
Diseases of the Eye	Mr. Nettleship.
Chemistry and Practical Chemistry ..	Dr. Bernays.
Midwifery, and the Diseases of Women and Infants	Dr. Cullingworth.
Physics and Natural Philosophy ..	Dr. Stone.
Materia Medica and Therapeutics ..	Dr. Stone.
Forensic Medicine and Toxicology	Mr. Clutton, Dr. Bernays, and Dr. Cory.
Pathological Anatomy	Dr. Payne, Dr. Sharkey, and Mr. Shattock.
Botany	Mr. A. W. Bennett.
Comparative Anatomy	Dr. Gulliver.
Mental Disease	Dr. H. Rayner.
Public Health and Sanitary Science ..	Dr. E. Seaton.

TEACHERS OF PRACTICAL SUBJECTS AND DEMONSTRATORS.

Practical Chemistry	Dr. Bernays.
Elementary Clinical Medicine	Dr. Hadden and Dr. Acland.
Practical and Manipulative Surgery	Mr. Mac Kellar, Mr. Clutton, and Mr. Pitts.
Demonstrations in Anatomy	Mr. Reid, Mr. Anderson, Dr. Taylor, Mr. Makins, Mr. Parsons.
Demonstrations in Morbid Anatomy	Dr. Sharkey, Dr. Hadden, and Dr. Gulliver.
Demonstrations in Physiology, Practical Physiology, and Morbid Histology	Dr. Copeman.
Diseases of the Eye	Mr. Nettleship and Mr. Lawford.
Diseases of the Skin	Mr. Anderson.
Diseases of the Throat	Dr. F. Semon.
Diseases of the Ear	Mr. Ballance.
Diseases of the Teeth	Mr. C. E. Truman.

TIMES OF ATTENDANCE OF THE PHYSICIANS AND SURGEONS IN THE WARDS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. BRISTOWE	—	2	—	—	2	—
Dr. STONE	2	—	—	2	—	—
Dr. ORD	2	—	—	2	—	—
Dr. HARLEY	—	2	—	—	2	—
Dr. PAYNE (Hon.)	2	—	—	—	2	—
Dr. CULLINGWORTH	—	2	—	—	2	—
Mr. SYDNEY JONES	—	2	—	—	2	—
Mr. CROFT	2	—	—	2	—	—
Sir WILLIAM MAC CORMAC	2	—	—	2	—	—
Mr. MAC KELLAR	—	2	—	—	2	—
Mr. NETTLESHIP	—	2	—	2	—	—

TIMES OF ATTENDANCE OF THE ASSISTANT-PHYSICIANS AND ASSISTANT-SURGEONS ON THE OUT-PATIENTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Dr. SHARKEY	1.30	—	—	1.30	—	—
Dr. GULLIVER	—	1.30	—	—	1.30	—
Dr. HADDEN	—	—	1.30	—	—	1.30
Dr. ACLAND	—	1.30	—	1.30	—	—
Dr. CORY (Women and Children)	—	—	1.30	—	—	1.30
Mr. CLUTTON	—	1.30	—	—	1.30	—
Mr. ANDERSON	1.30	—	—	1.30	—	—
Mr. PITTS	—	—	1.30	—	—	1.30
Mr. MAKINS	1.30	1.30	—	—	—	—

TIMES OF ATTENDANCE IN THE OUT-PATIENT SPECIAL DEPARTMENTS.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Mr. NETTLESHIP (Diseases of the Eye)	—	1.30	—	1.30	1.30	—
Mr. LAWFORD (Diseases of the Eye)	1.30	—	1.30	—	—	—
Mr. ANDERSON (Diseases of Skin)	—	—	—	—	1.30	—
Dr. SEMON (Diseases of Throat)	—	1.30	—	—	1.30	—
Mr. BALLANCE (Diseases of Ear)	1.30	—	—	—	—	—
Mr. TRUMAN (Diseases of Teeth)	—	10	—	—	10	—
Dr. CORY (Vaccination)	—	—	11.30	—	—	—

DAYS AND HOURS OF LECTURES AND DEMONSTRATIONS.

WINTER SESSION.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Years of Attendance.
Physics	—	—	—	—	—	12	1st Year.
Chemistry	—	10.30	—	10.30	10.30	—	do.
Descriptive and Surgical Anatomy	—	9.30	—	9.30	—	9.30	do.
	11	11	—	11	—	11	2nd Year.
Anatomical Demonstrations*	10½–4½	10½–4½	10½–4½	10½–4½	10½–4½	10½–1	1st & 2nd.
Physiology	9.30	—	9.30	—	9.30	—	do.
Physiological Demonstrations	10.30	12	—	12	12	—	1st Year.
	12	12	—	12	10.30	—	2nd Year.
Practical and Manipulative Surgery†	—	—	—	—	—	9	3rd Year.
Medicine ..... Oct., Nov., Dec.	9	—	—	9	9	—	do.
Medicine ..... Jan., Feb., Mar.	4	—	—	4	4	—	do.
Surgery ..... Oct., Nov., Dec.	4	—	—	4	4	—	do.
Surgery ..... Jan., Feb., Mar.	9	—	—	9	9	—	do.
Surgical Pathology	—	—	12	—	—	—	do.
Diseases of Women (Oct., Nov., Dec.)	—	4	—	—	—	—	3rd or 4th.
„ „ Clinical Jan., Feb., Mar.	—	4	—	—	—	—	
Pathological Anatomy (Practical)	—	—	—	—	—	11½–1½	do.
Diseases of the Eye (Oct., Nov., Dec.)	5	5	—	—	5	—	do.
Clinical Surgery (Special Course)	—	9	—	—	—	—	do.
Obstetric Demonstrations	—	—	9	—	—	—	do.

SUMMER SESSION.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Years.
Botany	—	10	10	—	—	10	1st Year.
Materia Medica	12	—	12.30	—	12	—	do.
Practical Chemistry	10—12	—	—	10—12	10—12	—	do.
Practical Physiology‡	—	2	2	—	2	—	do.
Anatomical Demonstrations*	2—4	10—12	10—12	2—4	2—4	—	2nd Year.
Midwifery	4	4	—	4	4	—	do.
Comparative Anatomy	9	—	—	9	—	—	do.
Practical and Manipulative Surgery†	—	—	—	—	9	—	do.
Forensic Medicine	—	9	—	9	—	9	3rd Year.
Pathological Anatomy	—	—	9	—	9	—	do.
Do. Demonstration	4.30	—	—	—	—	—	do.
Mental Diseases	—	—	—	—	12	—	3rd or 4th.
Public Health and Sanitary Science	—	—	10.30	—	—	—	do.
Examination of the Eye	—	5	—	—	5	—	do.
Clinical Surgery (Special Course)	9	—	—	—	—	—	do.

The times of delivery of the Clinical Lectures are arranged, in accordance with other work, in the course of the Session.

* The Dissecting Room is open daily to the Students from 9 a.m. till 5 p.m. (Saturdays 9 to 1). Special Tutorial Classes in Anatomy are held by the Lecturers and Demonstrators (p. 23).

† Classes in Practical and Operative Surgery are held four times a week for six weeks prior to the final examinations of the Examining Board in January, April, and July. In connection with these Classes Clinical Instruction is given in the Wards by the Resident Assistant Surgeon, and a course of demonstrations on Museum specimens is given by the Curator, Mr. SHATTOCK (p. 23).

‡ On Mondays, at 2 p.m., during the Summer Session, Dr. CHARLES gives instruction to a Senior Class in Section Cutting and Mounting, and in Volumetric Analysis, and on Thursdays at 12, a class in Advanced Practical Physiology is held by Dr. SHERRINGTON (p. 23).

CLINICAL TEACHING OF MEDICINE AND SURGERY. Clinical instruction is given daily by the Physicians and Surgeons during their visits to the Wards, and by the Assistant Physicians and Assistant Surgeons in the Out-Patient Departments (Time Table, p. 20). Lectures on Clinical Medicine and Surgery are given in the afternoon every week throughout the academical year by one or more of the Physicians and Surgeons; there is also a special course of Lectures on Clinical Surgery once a week in the morning (Time Table, p. 21).

SURGICAL OPERATIONS are performed in the Operating Theatres on Wednesdays and Saturdays at 1.30, and on other days when necessary.

DISEASES OF WOMEN.—Clinical instruction is given in Adelaide Ward on Tuesdays and Fridays at 2 p.m., and in the Out-Patient room on Wednesdays and Saturdays at 1.30 p.m. A course of Clinical Lectures is delivered during the latter half of the winter session. The Operations in this department take place on Thursdays at 2 p.m.

DISEASES OF CHILDREN.—Instruction is given by Dr. CORY, in the Out-Patient room, on Saturdays at 1.30.

MIDWIFERY.—A maternity department is connected with the hospital, women being attended in confinement at their own homes by students of the hospital, under the supervision of the Assistant Obstetric Physician and the Resident Accoucheur (p. 32). A short course of Obstetric demonstrations on the model is given by Dr. CORY during the winter session at 9 a.m.

MORBID ANATOMY.—The Post-Mortem Examinations, at which general instruction in Pathology is given, are held at 2 p.m. by Dr. SHARKEY (Tuesdays and Wednesdays), Dr. HADDEN (Mondays and Fridays), and Dr. GULLIVER (Thursdays and Saturdays).

THE SPECIAL DEPARTMENTS.

(*For Times of Attendance see Table, page* 20.)

Vaccination is taught practically by Dr. CORY, who is authorised by the Local Government Board to give certificates of proficiency in Vaccination at St. Thomas's Hospital. Fee, One Guinea (see p. 27).

Diseases of the Eye.—Clinical teaching in the Out-Patient rooms daily except Saturday. Clinical Lectures or Ophthalmoscopic Demonstrations weekly. The Operations are performed at 4 p.m. on Tuesdays, and 2 p.m. on Fridays.

Diseases of the Skin.—Instruction by Mr. ANDERSON on Fridays.

Diseases of the Throat are treated by Dr. SEMON on Tuesdays and Fridays. During the Winter Session Dr. SEMON gives a short course of Clinical Lectures to senior students.

Diseases of the Ear.—Instruction by Mr. BALLANCE on Mondays.

Diseases of the Teeth.—Mr. TRUMAN and Assistant give instruction in Dental Surgery on Tuesdays and Fridays.

The Administration of **Anæsthetics** is taught practically by Mr. TYRRELL and Mr. WHITE.

CLASSES AND DEMONSTRATIONS not Specified in the Tables at p. 21.

Anatomy.—Special Tutorial Classes in preparation for the April and July examinations (first and second) of the Conjoint Board are held in the course of the winter and summer sessions by the Lecturers Messrs. REID and ANDERSON, and by the Demonstrators, Dr. TAYLOR, Mr. MAKINS, and Mr. PARSONS; these are conducted mainly by examination upon subjects previously announced.

Physiology.—In the Summer Session instruction is given to a senior class in Cutting and Mounting Sections and in Volumetric Analysis by Dr. CHARLES on Mondays at 2 o'clock; and in advanced Practical Physiology (use of Physiological apparatus, &c.) by Dr. SHERRINGTON on Thursdays at 12.

Elementary Clinical Medicine.—An elementary course of practical instruction in the means of Physical Diagnosis is held by Drs. HADDEN and ACLAND for about a month before each quarterly appointment of Out-patient Clinical Clerks, and all intending applicants are required to attend this course, or an equivalent course elsewhere.

Practical Surgery for the Final Examination of the Conjoint Board.—In addition to the systematic instruction in the use of Surgical apparatus, &c., given in the Second Summer and Third Winter Sessions (Tables, p. 21), Tutorial Classes in Surgery are held daily for the six weeks preceding the final examination of the Conjoint Board in January, April, and July. The General Surgery, Surgical Anatomy and Operations are taken by Messrs. MACKELLAR, CLUTTON, and PITTS, the Pathological part by Mr. SHATTOCK, and the Clinical part in the Wards by the Resident Assistant Surgeon.

A Class for learning the use of the Ophthalmoscope is held each Session by Mr. LAWFORD.

The Museum is open to Students daily from 9 a.m. till 5 p.m., and every encouragement is given to Students to make use of its well arranged educational series for the purposes of their studies. A new Catalogue is being prepared by Mr. SHATTOCK.

For the courses above referred to no extra fee is charged.

For Special courses which may be attended on payment of an extra fee, *see p.* 27.

SUGGESTIONS TO STUDENTS.

Gentlemen who propose to obtain the Licence of the Royal College of Physicians of London and the Diploma of Member of the Royal College of Surgeons of England, or the Licence of the Society of Apothecaries, must, in order to be able to register their attendance upon Hospital practice of lectures, possess the certificate in Arts granted by one of the bodies whose certificates are recognised by the General Medical Council. "The Regulations of the General Medical Council in regard to the Registration of Medical Students" contain particulars of the Preliminary Examinations, and can be had from Messrs. Spottiswoode & Co., 54, Gracechurch Street, E.C., and at the office of the General Medical Council, 299, Oxford Street, W.

Students intending to obtain Medical Degrees in the University of London must pass both the Matriculation * and the Preliminary Scientific Examinations before commencing their regular Medical Studies.

For the Preliminary Scientific, the Intermediate M.B. and other higher Examinations, Special Classes are held (see p. 28). Students not proceeding to degrees in the University of London, will reap much advantage by acquiring, in the Preliminary Scientific Class, the scientific knowledge and training demanded by the University; both in respect to the formation of a sound foundation for Medical Study and because such knowledge is necessary in competing for the Entrance Science Scholarships.

Students proposing to enter should put themselves, at an early period, in communication with the Medical Secretary, who will be always ready to advise them. It is necessary, when writing to him, to state what Preliminary Examination has been passed, and if the Student's name has been registered at the Medical Council Office.

Students on joining must produce a Certificate of Preliminary Examination or of Registration. It is best to join at the beginning of a Session, Winter or Summer, but it is in the power of a Student to enter at any time.

All *Schedules requiring signature* should be given to the Secretary of the Medical School, three weeks before the date on which they have to be sent in to the various licensing bodies. The blanks *in the certificates for which signatures are wanted* must be duly filled in by the Student himself, otherwise the certificates will not be signed.

Students are not obliged to remain at the Hospital more than three years, provided they have obtained the certificates of attendance upon lectures required by the respective licensing bodies. They must, however, in the event of leaving the Hospital, be engaged during the fourth year in the acquisition of professional knowledge elsewhere.

---

* *Candidates who passed the Matriculation Examination in January*, 1885, *or previously, will be allowed to date the commencement of their Professional Studies from that Examination in accordance with former Regulations.*—University of London Calendar 1889-90, p. 159, Note.

It is right, however, that Students should be made aware that the loss of the fourth year of Hospital Study is strongly to be deprecated, since at that period the necessity for attending Lectures has ceased, and their whole time can be spent in the study of disease in the wards of the Hospital.

Students, when qualified, are advised to use every effort to obtain the Senior appointments open to them, especially those of Non-resident House Physician, House Physician, Assistant House Surgeon, House Surgeon, and Resident Accoucheur. These and other appointments are accessible to Students of the Hospital without payment, and offer opportunities for obtaining practical professional knowledge, which cannot be estimated too highly.

Students are recommended to attend the Lectures, &c., in the following order; and, in accordance with the Regulations of the Qualifying Bodies, are required to attend the Sessional Examinations.

FIRST YEAR.

Winter Session.—Anatomy, Dissections, Physiology, Chemistry.

Summer Session.—Materia Medica, Botany, Practical Physiology, Practical Chemistry.

SECOND YEAR.

Winter Session.—Anatomy, Physiology, Dissections.

Summer Session.—Midwifery, Comparative Anatomy, Practical Surgery, Clinical Medicine, Clinical Surgery.

N.B.—Students should defer attendance on Lectures other than those of the First and Second Years until they shall have passed the Second Examination of the Examining Board in England.

THIRD YEAR.

Winter Session.—Medicine, Surgery, Practical Surgery, Clinical Medicine, Clinical Surgery.

Summer Session.—Forensic Medicine, Pathological Anatomy, Clinical Medicine, Clinical Surgery.

FOURTH YEAR.

Students will find it practically necessary under the Regulations of the Examining Board in England, to spend their Fourth Year in the Study of Clinical Medicine, Surgery, and Midwifery. No Student can be admitted to the Final Examination of that Board, until two years shall have elapsed subsequent to his having passed the Second Professional Examination, which cannot be done until after the Second Winter of Study.

In addition to the above subjects, Students are advised, during their first Winter Session, to attend the Lectures on Physics and Natural Philosophy; in their third or fourth Summer Session, to attend the Lectures on Mental Disease, and on Public Health; in the third Winter, the Course of Surgical Pathology, and in the third or fourth Winter the Practical Course of Pathological Anatomy, the Lectures on Diseases of Women, and the Obstetric Demonstrations. The Course on Diseases of the Eye, and the teaching in the Eye Department should be attended in the third and fourth years. All these Courses are freely open to Students of the Hospital.

FEES FOR ATTENDANCE ON THE LECTURES AND ON THE PRACTICE OF THE HOSPITAL.

COMPOSITION FEES.

The Composition Fee to Hospital Practice and Lectures may be paid in several ways :

1st. One Hundred and Twenty-five Guineas paid on entrance;

2nd. One Hundred and Thirty-eight pounds in two payments, £75 on entrance, and £63 at the beginning of the next year;

3rd. Payment by three instalments, viz., of £65 at the beginning of the first year, £50 at the beginning of the second year, and £30 at the beginning of the third year.

Gentlemen entering at St. Thomas's in the second* year of their Studentship pay £65 for that year; £25 for the third year; or upon paying £85 on entrance, they will become "Perpetual" Students. Students entering in their third year pay £40; for the next year £20, or one payment of £55 on entrance will entitle them to be "Perpetual" Students.

The Fee for attendance on the *general* subjects required of Students in Dental Surgery, is for the two years, £55, or by instalments, £50 for the first year, and £10 for the second year. If certificates for *Dental* practice are also required, the special fee for that subject (page 27) has to be paid.

N.B.—It should be understood that the Composition or "Perpetual" Fees are intended to cover unlimited attendance on Lectures and Hospital Practice. If, however, at the end of seven years from his first attendance on instruction in Anatomy and Physiology a student has not obtained a Medical or Surgical Diploma, his rights as a Student will cease, and will be renewed only on the recommendation of the Medical School Committee.

Regularly qualified Medical Practitioners are admitted to the Hospital practice, and to the Lectures and Library, on payment of a fee of £12 10*s.* for unlimited attendance; but are not entitled to receive certificates for such attendance without payment for the special certificates required (see p. 27).

All Students are required by the Governors to conform to the Regulations of the Hospital and Medical School.

---

* Students who have commenced the study of the Profession otherwise than by attendance at a Medical School, will be considered to be first year's Students on joining the Medical School, as the time previously spent does not count until three years' Lectures have been attended, but a deduction from the Perpetual Fee will be allowed in such cases.

NOTE.—Cheques may be made payable to the Medical Secretary, and crossed "London and County Bank, Lambeth."

EXTRA CHARGES.

Students are now supplied with chemicals and materials to work with in the courses of Chemistry and Physiology without extra charge, but there are certain instruments and materials required during the course of study, as follows, viz.:

Those attending Practical Physiology and Physiological Demonstrations must provide themselves with Microscopes.

Students Dissecting pay for the "parts" they dissect at fixed rates, which are notified in the Library.

Each Clinical Clerk must provide himself with a Stethoscope and Registering Clinical Thermometer. Each Dresser is required to have a Registering Clinical Thermometer, a Pocket Case of Instruments, and a Case of Silver or Plated Catheters.

The fees for instruction in Vaccination and in Practical Pharmacy are not included in the Composition Fees, as it is open to students to obtain instruction in these subjects elsewhere. But Dr. CORY is authorised by the Local Government Board to give certificates for proficiency in Vaccination (fee, 1 guinea); and Practical Pharmacy is taught by the Hospital Pharmaceutist to those students who require it (fee, 3 guineas for 3 months). Application to be made to the Medical Secretary.

The different Courses of Lectures, or the Hospital Practice, may also be attended separately on the following terms, which entitle to Certificates for such Attendances.

For the Medical and Surgical Practice, including Clinical Lectures and the Special Departments.

Three months	£15	Twelve months	£40
Six ditto	£26	Perpetual	£55
Nine ditto	£35		

Dental Practice, 1 year 2 Gs., Perpetual 3 Gs.

Midwifery Practice, 5 Gs. Ophthalmic Practice, 2 Gs.

For Lectures and Demonstrations.	1 *Course.*	*Perpetual.*
Medicine, Surgery, Physiology, Anatomy, Chemistry each	7 Gs. ..	10 Gs.
Midwifery	5 „ ..	6 „
Materia Medica, Botany, Physics, Forensic Medicine, Pathological Anaty., and Comparative Anaty. each	4 „ ..	5 „
Mental Diseases, Diseases of the Eye, Public Health each	2 „ ..	3 „
* Practical Chemistry, Practical Surgery, Practical Physiology, Pathological Anatomy including the Practical Course .. .. each	6 „	—

Dissections, three months 4 Gs., six months 6 Gs., Perpetual 10 Gs.

Operative Surgery.—A voluntary class will be formed by Messrs. CLUTTON and PITTS during the Summer, and at other convenient times, for Gentlemen who wish to prepare for the Fellowship or other Examinations. This course will not include Operations on the Eye-ball. Fee, £5 5*s*.

Operative Surgery of the Eye.—A voluntary class will be formed by Mr. LAWFORD during the Summer. Fee, £2 2*s*.

Advanced Anatomy.—Voluntary classes for the M.B. Examinations of Oxford and Cambridge and for the Fellowship of the Royal College of Surgeons will be formed by the Lecturers on Anatomy, commencing in the months of February and October. Fee, £6 6*s*.

Laryngology.—A special course is given by Dr. SEMON during the Winter Session. Fee for Gentlemen, not Students of the Hospital, 3 Gs.

Special Courses of Obstetric Demonstrations are given by Dr. CORY throughout the year. Fee, £3 3*s*.

Public Health and Sanitary Science.—Lectures are open to Gentlemen, not Students of the Hospital, and instruction will be given specially to Candidates for Certificates and Examinations in Sanitary Science and Hygiene. A special course of Laboratory Instruction is given in May and November. Fee, £6 6*s*.

---

* These amounts do not include the extra charges in the Practical Courses for Materials, Instruments, &c.

UNIVERSITY OF LONDON.

PRELIMINARY SCIENTIFIC AND INTERMEDIATE M.B. CLASSES.

PRELIMINARY SCIENTIFIC EXAMINATION.

Special Classes in the subjects required for the Preliminary Scientific Examination at the University of London, will be held from October to July, and Students joining the Classes are allowed to attend the Courses of Lectures on Chemistry in the Winter, and on Botany and Comparative Anatomy in the Summer. (*See* p. 21.)

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Botany. A. W. BENNETT, M.A.	—	—	11	—	—	—
Chemistry, Inorganic } Dr. BERNAYS	Winter 11.30		—	—	—	—
„ Practical } Dr. BERNAYS	Summer 11		—	12	—	—
	—	—	—	Winter	11.30	—
Physics. W. H. STONE, M.A., M.B.	—	—	—	—	January to July 3	Winter 12
Zoology. G. GULLIVER, M.A., M.B..	—	—	Winter 1.30	—	—	Summer 11

N.B.—A Microscope and simple Dissecting Apparatus must be provided by each Member of the Class.

Fee to Students of the Hospital, inclusive of Practical Chemistry and Chemicals .. .. .. *Ten Guineas.*
To others, ditto .. .. .. *Twelve Guineas.*
Fee for any single subject .. .. *Four Guineas.*
Subsequent Courses, half Fee, if recommended by the respective Teachers (except Chemicals, for which a charge of One Guinea and a half is made).

INTERMEDIATE EXAMINATION IN MEDICINE.

Special Classes in the subjects required for the January and July Examinations are held from October to July.

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Anatomy. R. W. REID, C.M., F.R.C.S.	3	—	—	3	—	—
Materia Medica and Pharmaceutical Chemistry. } W. H. STONE, M.A., M.B.	—	3	—	—	3	—
Organic Chemistry } Dr. BERNAYS...	—	Summer 10	11	—	—	—
Organic Analysis } Dr. BERNAYS...	—	—	—	—	—	10
Physiology. T. C. CHARLES, M.D. ..	—	—	—	—	Winter 2 Summer 1	—

Fee to Students of the Hospital inclusive of Organic Analysis and Chemicals* .. .. .. *Nine Guineas.*
To others ditto .. .. *Twelve Guineas.*
Fee for any Single Subject .. .. *Three Guineas.*

Subsequent Courses, half Fee if recommended by the respective Teachers (except Chemicals, for which full fee is charged).

* Instruction and Practice in Organic Analysis is essential for this Examination.

N.B.—Private Classes are held for the Final M.B. Examination.

SCHOLARSHIPS, PRIZES, APPOINTMENTS, AND HONORARY DISTINCTIONS.

OPEN SCHOLARSHIPS IN NATURAL SCIENCE.

As an inducement to the study of Natural Science before the commencement of the strictly Medical Course, two Scholarships, of the value of 125 Guineas and £60 respectively, are awarded annually, after an examination in Physics, Chemistry, and either Botany or Zoology, at the option of Candidates. The Examinations for these Scholarships will be held on September 25th, 26th, and 27th, 1889, the subjects being the same as those for honours in the Preliminary Scientific Examination of the London University, viz.: Botany, Zoology, Inorganic Chemistry (including Practical Chemistry), and Physics or Natural Philosophy. These Scholarships are open to all Students who have passed a recognised Preliminary Examination in Arts, and have not yet attended Lectures on Anatomy and Physiology of the first year, without any condition as to their becoming Students of the Hospital, except in the case of successful Candidates, who must enter at once as Perpetual Pupils. Chemistry and Physics are compulsory subjects for this Examination, and Candidates must take up one of the other subjects at their option. The Examination will be conducted by means of written papers and practical work. The names of Competitors with Certificate of Preliminary Examination must be sent to the Secretary not later than September 23rd.

THE WILLIAM TITE SCHOLARSHIP.

This Scholarship, founded by the late Sir W. Tite, C.B., M.P., F.R.S., is endowed with £1,000 Consols, the Interest on which, about £27 10s., is awarded each year to the Student placed highest in the 1st Class List in the examinations at the end of the first Winter Session. Preference, in case of equality between Students, is to be given to the son of a medical man, and more particularly of one who has been educated at St. Thomas's Hospital or is in Practice in Bath.

THE MUSGROVE SCHOLARSHIP.

This Scholarship, founded by Sir John Musgrove, Bart., the late President of the Hospital, is endowed with £1,400 Consols, the Interest on which, about £38 10s., is awarded biennially to the Student who shall take the highest place in the 1st Class List in the examinations at the end of the Second Winter Session. It is tenable for two years, provided the holder obtains a place in the 1st Class in the Examinations at the end of the third winter.

THE PEACOCK SCHOLARSHIP.

This Scholarship, founded by the will of the late Dr. Thomas Bevill Peacock, for many years Physician, and at the time of his death Consulting Physician to St. Thomas's Hospital, is of the same value as the Musgrove Scholarship; is awarded and held upon the same terms; and is given every second year in alternation with that Scholarship.

Gentlemen obtaining these Scholarships are not precluded from receiving any of the Prizes awarded at the subsequent periodical examinations.

PRIZES.

The following Scholarships, Prizes, and Medals, will be offered for Competition during the year 1889–1890:—

TWO OPEN SCHOLARSHIPS IN NATURAL SCIENCE of the value of 125 Guineas and £60 respectively, at Entrance.

AT THE END OF FIRST YEAR.

Winter.

1st.	..	The William Tite Scholarship	£27 10s.
2nd.	..	College Prize	£20.
3rd.	..	Ditto	£10.

Summer.

1st.	..	College Prize	£15.
2nd.	..	Ditto	£10.

SECOND YEAR.

Winter.

1st.	..	The Peacock Scholarship	£38 10s.
2nd.	..	College Prize	£20.
3rd.	..	Ditto	£10.

Summer.

1st.	..	College Prize	£15.
2nd.	..	Ditto	£10.

THIRD YEAR.

Winter.

		Second Tenure of The Musgrove Scholarship (if holder obtains 1st Class in this examination)	£38 10s.
1st.	..	College Prize	£20.
2nd.	..	Ditto	£15.
3rd.	..	Ditto	£10.

Summer.

1st.	..	College Prize	£15.
2nd.	..	Ditto	£10.

Students of each year are classed according to their respective merits in the examinations, and those in the *first* class in each year receive Certificates of Honour, and a preference in the selection for Hospital Appointments.

Free Scholarships are given to distinguished Pupils of Merchant Taylors' and City of London Schools, and Epsom College.

In addition there are awarded—

THE CHESELDEN MEDAL, *Annually.*
THE MEAD MEDAL, *do.*
THE SOLLY MEDAL AND PRIZE, *Biennially.*
THE GRAINGER TESTIMONIAL PRIZE, *Annually.*
THE TREASURER'S GOLD MEDAL, *do.*

The CHESELDEN MEDAL, founded by the late GEORGE VAUGHAN, Esq., is annually awarded to the Fourth Year's Student who most distinguishes himself in respect of a Special Practical Examination in Surgery and Surgical Anatomy.

The MEAD MEDAL, founded by Mr. and Mrs. NEWMAN SMITH, is awarded annually, to a Fourth Year's Student, in respect of a Special Practical Examination in Medicine, Pathology and Hygiene.

Competitors for either of these Medals must have been Students of St. Thomas's for at least two out of the four Winter Sessions.

The SOLLY MEDAL, together with a Prize in Money, will be awarded biennially. Those Students are eligible to compete who shall be of from three to six years' standing. The award is made for the best series of Reports of Surgical cases coming under the Student's personal observation

in the Wards, not, however, to exceed ten in number. Preference is given, merit in other respects being equal, to Reports illustrated by the author's drawings, and short Clinical Remarks must accompany each Report. The next award will be made at the end of 1889–90, papers to be sent in before April 1st, 1890.

The GRAINGER TESTIMONIAL PRIZE, of the value of Fifteen Pounds, is awarded annually to the Student who shall have completed his third year of study at St. Thomas's Hospital, and not have exceeded his sixth year, for the best Anatomical or Physiological Essay devoted to the explanation of preparations and dissections illustrative of the subject. The successful Essay and the accompanying Preparations and Dissections will become the property of the Medical School. A small sum is provided annually to reimburse unsuccessful competitors for any expense which they may have incurred in the preparation of suitable illustrations. When such compensation is allowed, the Preparations and Dissections become the property of the Medical School. Subject to the approval of the School Committee, candidates may select their own topics; otherwise, the following two are given for selection:—1. A series of Preparations and Dissections illustrating the Anatomy of the Male and Female Bladder; Prostate; Uterus; Ovaries; Female Urethra; Prostatic, Membranous and Bulbous portions of the Male Urethra, accompanied by a description of the parts exposed in the specimens. 2. The Sub-Maxillary Gland, showing dissections of the gland *in situ* with its nerve connections, and by microscopical preparations the ultimate distribution of the nerves. Papers to be sent in before October 1st, 1890.

The TREASURER'S GOLD MEDAL for General Proficiency and Good Conduct, is awarded at the end of the 4th Winter Session to the Student who has passed through his pupilage in St. Thomas's Hospital in the most meritorious manner.

APPOINTMENTS.

A RESIDENT ASSISTANT PHYSICIAN and a RESIDENT ASSISTANT SURGEON, at a salary of £100 per annum each, are from time to time appointed. The appointments are annual, but the tenure of office may be renewed for a term not exceeding three years.

TWO RESIDENT and ONE NON-RESIDENT HOUSE PHYSICIANS, an ASSISTANT HOUSE PHYSICIAN, FOUR HOUSE SURGEONS, TWO ASSISTANT HOUSE SURGEONS, and a RESIDENT ACCOUCHEUR, are selected every three months from Gentlemen who have obtained their professional diplomas; they hold office for three or six months. One House Physician, the Assistant House Physician, and the Assistant House Surgeons, are non-resident, but the other Officers, together with the Dressers on accident duty, are provided with Rooms and Commons in the Hospital, free of expense.

TWO OPHTHALMIC CLINICAL ASSISTANTS, chosen from Qualified Students who have worked satisfactorily in the Ophthalmic Department, are appointed for six months, one of whom receives a Salary at the rate of £50 per annum, and the other is provided with Commons.

CLINICAL ASSISTANTS in the Special Departments for Diseases of the Skin, Throat, and Ear, are appointed every three months from Students who have served as Clinical Clerks or Dressers in those Departments.

ASSISTANTS to the Teachers of Practical and Manipulative Surgery are appointed for the Winter and Summer Sessions.

CLINICAL CLERKS, and DRESSERS, to In-Patients are selected to the number of at least 100 each year. They are chosen from amongst the most eligible pupils. CLINICAL CLERKS, and DRESSERS, for the Out-Patients are also appointed to the number of at least 80 to 100 each year; applicants are required to have passed the 2nd examination of the Conjoint Board, or an equivalent examination, and to have attended a course of instruction in Elementary Clinical Medicine (p. 23).

STUDENTS who have attended a course of Lectures on Midwifery may enter their names as Obstetric Clerks and will be appointed in rotation. Each Clerk holds office for a fortnight, and Certificates of Honour are awarded to those Gentlemen who have satisfactorily attended Sixty Maternity cases. About 50 Obstetric Clerks are appointed yearly.

Two HOSPITAL REGISTRARS, at an annual Salary of £100 each, are appointed in each year. They are eligible for annual re-appointment, but may not hold office for more than five years. Preference will be given to Gentlemen who have been distinguished for merit, and have completed their studies in the School. The payment of the Registrars is subject to the presentation of a Report upon the Practice of the Hospital, and to such Report being regarded as satisfactory by the Medical Officers to whom it shall have been referred.

TWO OR MORE STUDENTS are selected from those who have completed their Second Winter Session, to act as Assistants in the Physiological Laboratory. They receive Certificates of Honour according to merit.

PROSECTORS are appointed in the early part of the Winter Session, and Certificates of Honour are awarded to the best Dissectors.

STUDENTS are likewise appointed to act as Assistants to the Demonstrators of Pathological Anatomy in the Post-mortem Room.

Students have access, with the permission of the Officers under whose superintendence they are placed, to the Museums of Human and Comparative Anatomy and Pathology—of Materia Medica—of Botany—and of Chemistry and Mineralogy—and to the Laboratories of Practical Physiology and Practical Chemistry; also, by special permission, to Dr. Stone's collection of Physical apparatus; and to the Library, which contains a large collection of works of reference and modern text-books.

REGULATIONS FOR THE EXAMINATION AND CLASSIFICATION OF THE STUDENTS AT THE MEDICAL SCHOOL.

1. In accordance with the Regulations of the Qualifying Bodies, Students must attend the Class Examinations in the subjects for which they have to be certified, and show by their answers to the questions that they have paid proper attention to the Lectures, otherwise the signature to their Schedules may be withheld.

2. There shall be held at least two Examinations in each Winter and one in each Summer Session in each subject on which attendance is required during that Session, and the marks obtained in these Examinations shall be the basis for the Classification of Students and the Award of Prizes for each Session respectively. Provided that any extra Examination in the course of the Session, in any subject, be not allowed to interfere with the ordinary Lectures in other subjects.

3. The number of marks allotted to each subject in the following Schedule is not to be exceeded in case the number of Examinations held during the Session be more than two, but must be distributed amongst the several Examinations.

1st YEAR'S SUBJECTS.		
WINTER	Anatomy	600
	Practical Anatomy	200
	Physiology	600
	Chemistry	600
	Total	2000
SUMMER	Practical Chemistry	300
	Materia Medica	300
	Botany	150
	Practical Physiology	300
	Total	1050
2nd YEAR'S SUBJECTS.		
WINTER	Anatomy	600
	Practical Anatomy	200
	Physiology	600
	Total	1400
SUMMER	Midwifery	500
	Comparative Anatomy	100
	Practical Surgery	100
	Total	700
3rd YEAR'S SUBJECTS.		
WINTER	Medicine	650
	Surgery	650
	Practical Surgery	200
	Total	1500
SUMMER	Forensic Medicine	250
	Pathological Anatomy	350
	Total	600

4. All Students who have obtained at least one-third of the total number of marks in each subject, and not less than two-thirds of the total number allotted to all the subjects collectively, shall be placed in the 1st Class.

Those who have obtained one-third of the total number of marks allotted to all the subjects collectively shall be placed in the 2nd Class.

The names of those who do not obtain either a 1st or 2nd Class position will not be published, but a General List showing the exact position of each Student at every Examination shall be kept by the Secretary, from whom any Student can learn his own position, but no Lecturer shall make known to Students the number of marks obtained by any Student in any subject.

5. The Prizes shall be awarded to the Students holding the 1st, 2nd, and 3rd positions in the 1st Class of each Winter Session, and to those holding the 1st and 2nd positions of the 1st Class in each Summer Session.

6. The number of marks allotted to the Examinations for the MEAD and CHESELDEN Medals shall be 600 each.

7. In awarding the TREASURER'S Medal the number of marks obtained at the Sessional Examinations and in the MEAD and CHESELDEN Examinations shall be counted, provided that, as regards the Examination for the Medals, two-thirds of the maximum marks be obtained, but those obtained in the Entrance Scholarship Competition shall not be included.

8. The Authorities reserve the right of withholding any Prize, if no competitor of sufficient merit present himself.

Distribution of Prizes for the Past Sessions.

SUMMER SESSION, 1888.

FIRST YEAR'S STUDENTS.

J. H. FISHER, *Exeter*	College Prize, £15, and Certificate of Honour.
C. S. WALLACE, *Haslemere*	College Prize, £10, and Certificate of Honour.
W. B. WINSTON, *Oxford Gardens*	Certificate of Honour.
W. WATKINS-PITCHFORD, *Southwark*	Certificate of Honour.
W. P. PURVIS, *Greenwich*	Certificate of Honour.
C. S. JAFFÉ, *Westbourne Terrace*	Certificate of Honour.
P. C. GABBETT, *Lower Norwood*	Certificate of Honour.
W. G. SUTCLIFFE, *Clapham*	Certificate of Honour.
W. L. WAINWRIGHT, *Weybridge*	Certificate of Honour.

SECOND YEAR'S STUDENTS.

A. KING, *Norwich*	College Prize, £15, and Certificate of Honour.
Eq. D. F. SHEARER, *Bradford, Yorks*	College Prize, £10, and Certificate of Honour.
Eq. E. T. WHITEHEAD, *Battersea*	

THIRD YEAR'S STUDENTS.

A. WENTWORTH JONES, *Godington, Oxon*	College Prize, £15, and Certificate of Honour.
C. C. HEYWOOD, *Swinton, Manchester*	College Prize, £10, and Certificate of Honour.
A. C. LANKESTER, *Leicester*	Certificate of Honour.

WINTER SESSION, 1888-89.

ENTRANCE SCIENCE SCHOLARSHIPS.

E. M. Hainworth, *Blackheath* ... ... — Scholarship, 125 Gs., and Certificate of Honour.

E. Smith, *Wandsworth Common*... ... ... — Scholarship, £60, and Certificate of Honour.

FIRST YEAR'S STUDENTS.

E. Smith, *Wandsworth Common* ... ... — The Wm. Tite Scholarship £27 10s., and Certificate of Honour.

W. G. Sutcliffe, *Clapham*... ... ... — College Prize, £20, and Certificate of Honour.

C. Planck, *Regent's Park* ... ... — College Prize, £10, and Certificate of Honour.

L. V. Tebbs, *Notting Hill* ... ... — Certificate of Honour.

H. M. Moore, *Eastbourne* ... ... — Certificate of Honour.

J. W. Hewett, *Herne Hill* ... ... — Certificate of Honour.

G. J. Arnold, *Wickwar* ... ... — Certificate of Honour.

K. B. J. Vickers, *Darlington* ... ... — Certificate of Honour.

W. Redpath, *Norwood Road* ... ... — Certificate of Honour.

C. L. B. Stares, *Portchester* ... ... — Certificate of Honour.

C. W. Grant-Wilson, *Balham Park Road* ... — Certificate of Honour.

E. M. Hainworth, *Blackheath* ... ... — Certificate of Honour.

E. Miskin, *York Road, Lambeth* ... ... — Certificate of Honour.

SECOND YEAR'S STUDENTS.

J. H. Fisher, *Exeter* ... ... — The Musgrove Scholarship, £38 10s., and Certificate of Honour.

C. S. Wallace, *Haslemere* ... ... — College Prize, £20, and Certificate of Honour.

W. B. Winston, *Oxford Gardens* ... ... — College Prize, £10, and Certificate of Honour.

A. Banks, *Clapham* ... ... — Certificate of Honour.

W. Potter, *York* ... ... — Certificate of Honour.

J. G. Turner, *Ealing* ... ... — Certificate of Honour.

C. Latter, *Downham Market* ... ... — Certificate of Honour.

W. A. Bowring, *Kingston Hill* ... . — Certificate of Honour.

A. M. Campbell, *Worcester* ... ... — Certificate of Honour.

W. Watkins-Pitchford, *Southwark* ... ... — Certificate of Honour.

Æq. W. E. Drake, *Winchester* ... ... — Certificate of Honour.

Æq. W. P. Purvis, *Greenwich* ... ... — Certificate of Honour.

W. L. Wainwright, *Weybridge* ... ... — Certificate of Honour.

C. S. Jaffé, *Westbourne Terrace* ... ... — Certificate of Honour.

T. W. Hicks, *Hull* ... ... — Certificate of Honour.

THIRD YEAR'S STUDENTS.

J. J. Perkins, *Brixton* ... ... — College Prize, £20, and Certificate of Honour.

W. H. Millar, *Brixton Hill* ... ... — College Prize, £15, and Certificate of Honour.

A. King, *Norwich* ... ... — College Prize, £10, and Certificate of Honour.

E. T. Whitehead, *Battersea* ... ... — Certificate of Honour.

C. P. Lovell, *Hyde Park* ... ... — 2nd Tenure of the Peacock Scholarship.

PROSECTORS.

A. Banks, *Clapham* ... ... — Certificate of Honour.

W. A. Bowring, *Kingston Hill* ... ... — Certificate of Honour.

J. H. Fisher, *Exeter* ... ... — Certificate of Honour.

C. S. Jaffé, *Westbourne Terrace* ... ... — Certificate of Honour.

W. Potter, *York* ... ... — Certificate of Honour.

C. S. Wallace, *Haslemere* ... ... — Certificate of Honour.

ASSISTANTS IN PHYSIOLOGICAL LABORATORY.

A. Dalzell, *Workington*	Certificate of Honour.
C. P. Lovell, *Hyde Park*	Certificate of Honour.
W. F. Umney, *Sydenham*	Certificate of Honour.
S. Zeidan, *Cairo*	Certificate of Honour.
H. J. Frederick, *Sidcup*	Certificate of Honour.
W. B. Winston, *Oxford Gardens*	Certificate of Honour.

PRACTICAL MEDICINE.

S. G. Toller	**The Mead Medal**, founded by Mr. and Mrs. Newman Smith.
A. W. Musson	Special Mention and Certificates of Honour.
T. A. Dukes	
A. Wentworth Jones	

SURGERY AND SURGICAL ANATOMY.

A. C. Lankester	**The Cheselden Medal**, founded by the late George Vaughan, Esq.
A F. Stabb	Special Mention and Certificates of Honour.
T. W. Lambert	
H. W. Nix	

RESIDENT ACCOUCHEURS.

S. W. Wheaton	Certificate of Honour.
C. H. James	Certificate of Honour.
H. B. Luard	Certificate of Honour.
E. C. Stabb	Certificate of Honour.

HOUSE PHYSICIANS.

H. B. Luard	... ...	Certificate of Honour.
C. W. Cooke	... ...	Certificate of Honour.
H. C. Bristowe	... ...	Certificate of Honour.
H. G. Turney	... ...	Certificate of Honour.
C. H. Eccles	Non-Resident	Certificate of Honour
W. H. L. Copeland	Non-Resident	Certificate of Honour.

ASSISTANT HOUSE PHYSICIANS.

H. B. Seddon...	Certificate of Honour.
G. R. Anderson	Certificate of Honour.

HOUSE SURGEONS.

W. F. Brook	Certificate of Honour.
F. Fawssett	Certificate of Honour.
W. W. Ord	Certificate of Honour.
J. T. Calvert	Certificate of Honour.
F. C. Abbott	Certificate of Honour.
R. V. Solly	Certificate of Honour.
C. H. James	Certificate of Honour.
C. Brown...	Certificate of Honour.

ASSISTANT HOUSE SURGEONS.

C. H. James	Certificate of Honour.
C. W. Cooke	Certificate of Honour.
S. B. Cook	Certificate of Honour.
E. Hobhouse	Certificate of Honour.
H. Duncan	Certificate of Honour.
F. C. Abbott...	Certificate of Honour.
A. N. Boycott	Certificate of Honour.
H. H. Hulbert	Certificate of Honour.

FOR GENERAL PROFICIENCY AND GOOD CONDUCT.

A. F. Stabb	**The Treasurer's Gold Medal.**

THE MUSEUM OF HUMAN AND COMPARATIVE ANATOMY AND PATHOLOGY.

Curator.—S. G. Shattock, Esq., F.R.C.S.

Among the earliest contributors to this Museum were Mr. Cline, Sir A. Cooper, Mr. Travers, and Mr. Tyrrell.

The Printed Catalogue of the Museum consists of three octavo volumes: in the first volume, edited by Mr. John F. South, are described the preparations of Normal Human, Microscopical, and Comparative Anatomy; and the 2nd and 3rd volumes, edited by Mr. Sydney Jones, contain descriptions of the specimens illustrative of Pathological Anatomy. A Second Edition of the Pathological Catalogue by Mr. Shattock is in course of preparation.

The COLLECTION of HUMAN ANATOMY consists of a Physiological and a Pathological Department: the former contains, besides wax models and casts, a large number of dissected Preparations, illustrating the Organs of Locomotion and Sense; the Nervous System; the Digestive, Respiratory, and Urinary Apparatus; the Vascular System, the Organs of Reproduction, and the tissues.

The Pathological Division is very rich, containing above 4000 Specimens, arranged in thirty-seven Sections, as follows:—

SECT.
A. Injuries of Bone: Fractures.
B. Injuries of Joints: Dislocations.
C. Diseases of Bone.
D. Diseases of Joints.
E. Diseases of the Spinal Column.
F. Injuries and Diseases of the Muscular System.
G. Injuries and Diseases of the Eye.
H. Injuries and Diseases of the Ear.
I. Injuries and Diseases of the Nose, Antrum, &c.
K. Injuries and Diseases of the Skin and Subcutaneous Cellular Tissue.
L. Injuries of the Skull.
M. Injuries of the Spine.
N. Injuries and Diseases of the Nervous System.
O. Injuries and Diseases of Mouth, Fauces, Pharynx, and the Œsophagus.
P. Injuries and Diseases of the Stomach.
Q. Injuries and Diseases of the Intestines and Peritoneum.
R. Intussusception, Internal Strangulation, and Hernia.
S. Injuries and Diseases of the Liver.
T. Diseases of the Pancreas and Salivary Glands.
U. Injuries and Diseases of the Spleen.
V. Diseases of Thyroid, Thymus, and Suprarenal Capsules.

SECT.
W. Injuries and Diseases of the Respiratory Apparatus.
X. Injuries and Diseases of the Heart and Pericardium.
Y. Injuries and Diseases of Arteries and Veins.
Z. Diseases of Lymphatic and Lacteal Vessels and Glands.
AA. Injuries and Diseases of the Kidneys, and Ureters.
BB. Injuries and Diseases of the Bladder.
CC. Diseases of the Prostate Gland and Vesiculæ Seminales, Urinary and Prostatic Calculi.
DD. Injuries and Diseases of the Penis and Urethra.
EE. Injuries and Diseases of the Testicles and Scrotum.
FF. Diseases of the Ovaries and Fallopian Tubes.
GG. Injuries and Diseases of the Uterus, Vagina, and external organs.
HH. Diseases and displacements of the Ovum.
II. Diseases of the Breast.
KK. Tumours and other allied Morbid Growths.
LL. Malformations.
MM. Wax Models and Casts.

Bones, Joints, &c.—Amongst the specimens illustrating Injuries of Bones and Joints, are nearly all those described and figured in Sir A. Cooper's Treatise on 'Dislocations and Fractures of the Joints,' and in Cooper's and Travers's 'Surgical Essays.'

This section has been enriched by Sir William MacCormac, who presented numerous specimens of gunshot fractures, &c., obtained from cases under his care during the Franco-German War (1870).

Sir A. Cooper's preparations, illustrating repair after fracture, are contained in this Section.

Eye.—This Section was arranged by Mr. Dixon, and contains specimens described and figured by Sir A. Cooper, Mr. Travers, and Mr. Saunders. A number of Specimens are also kept for purposes of Demonstration in the Eye Department.

Skin.—Several Tumours are contained in this Section, as well as, amongst others, the horn, ten inches in length, removed from a man's forehead by Sir A. Cooper.

Head, Spine, Nervous System.—Showing all kinds of Injuries to the Skull; Spinal Injuries, which have been subjected to operation by Cline, Tyrrell, and South, as well as every variety, frequent and rare, of disease of the Nervous System.

Intestines and Peritoneum.—Travers's Preparations, illustrating 'The Process of Nature in repairing Injuries of the Intestines,' are contained in this Section.

Hernia.—This Section contains nearly all the Preparations figured and described in 'Cooper's Hernia.' Besides the more common varieties of Hernia, there are Specimens of Mesenteric, Mesocolic, Vesical, Thyroideal, Ischiatic, Perineal, and Phrenic Hernia.

Liver.—Besides every variety of Hepatic Disease, this Section contains a large number of Biliary Calculi, many of which have been presented by Dr. Ord. Some specimens of Actinomycosis are also contained in it.

Respiratory and Vascular Systems.—Amongst these Preparations are two Specimens, showing ligature of the Abdominal Aorta; one of them the case of Sir A. Cooper; the other that of Mr. John F. South. There are also Specimens of spontaneous obliteration of the Aorta.

The Preparations illustrative of Travers's experiments on Arteries and Veins are in the collection.

There are also very interesting Specimens of Diseased Heart, described by Dr. Wells and Dr. Elliotson.

Kidneys.—Described and arranged by Mr. Simon.

Urinary Calculi.—250 in number—analysed by Mr. Heisch and Dr. Bernays.

Testes.—Most of the preparations figured in Sir A. Cooper's work 'On the Testis,' are contained in this Section.

Malformations.—This Section contains Specimens of Spina Bifida, Acephalous and Double monsters, Ectopia Cordis, Malformations of the Heart, Urinary, and Generative Organs. Most of them have been elaborately described by Mr. R. D. Grainger, and the malformations of the heart are referred to by Dr. Farre and Dr. Peacock in their works. There are also very interesting specimens of malformation described by Dr. Bristowe, Mr. Le Gros Clark, and Mr. Sydney Jones.

The Museum contains a considerable number of valuable Ethnological Specimens.

The Collection of Comparative Anatomy comprises about 700 Preparations, some of them very rare and valuable.

A large number of these Specimens were made by Sir A. Cooper, to illustrate his Lectures, when Professor of Comparative Anatomy to the Royal College of Surgeons.

The Cabinets of Microscopical Anatomy, which are under the charge of the Demonstrator of Practical Physiology, contain upwards of 2,000 injected and other Specimens of normal and morbid Histology, parasites, urinary deposits, &c. These include the Preparations made by Mr. Rainey, to illustrate the Histological Course of Lectures; and others described by him in Papers published in the Philosophical, Medico-Chirurgical, and Microscopical Transactions, and in various scientific works. This collection has been considerably enlarged by the addition of a series of specimens presented by Dr. Acland, which includes the chief forms of micro-organisms found in diseased tissues, as well as specimens illustrating the development of the Chick. The specimens are available for use by students who wish to examine them, subject to such regulations as may be deemed necessary.

The Materia Medica Museum contains in cases a complete collection of all the chemicals and organic substances included in the British Pharmacopœia of 1885; all these are named and numbered.

A second collection of all the chief medicinal substances is placed in drawers, and is freely accessible to students.

A large and very fine collection of dried medicinal plants, named according to the latest nomenclature, is displayed on the walls of the Museum.

The Museum is under the conjoint superintendence of Dr. Stone and Mr. Shattock.

The Collection of Chemistry and Mineralogy is under the Superintendence of Dr. Bernays, who presented the larger part of the Specimens contained in it. It is displayed with the Collection of Materia Medica.

St. Thomas's Hospital.

MEDICAL AND PHYSICAL SOCIETY.

President, 1889–90.

Dr. W. B. Hadden.

Vice-Presidents.

The Physicians.
The Surgeons.
The Assist.-Physicians.
The Assist.-Surgeons.
Dr. Bernays.
Dr. A. Carpenter.
Dr. Cranstoun Charles.
W. Edmunds, Esq.
Dr. Kilner.
Dr. Rayner.
R. W. Reid, Esq.
G. Rendle, Esq.
S. G. Shattock, Esq.
Dr. Sherrington.
Dr. Seymour Taylor.
C. E. Truman, Esq.
Dr. Copeman.

Hon. Secretaries.

E. E. Ware. J. W. Mactavish.

Committee.

E. Solly.
C. H. James.
F. C. Abbott.
H. G. Turney.
S. G. Toller.
J. E. F. André.
H. Burden.
T. H. Kellock.
J. H. Fisher.
E. M. Hainworth.

This Society was originated in the early part of the present century by students of the Hospital, and has for its object the reading and discussion of papers on Medicine, Surgery, and subjects of General Interest, the narration of cases, and the exhibition of specimens of Physiological and Pathological interest. The Meetings are held in the Library on alternate Thursdays at 8.30 p.m., and terminate not later than 10 p.m.

The soirée, to which past and present students are invited, will be held in May or June, in the Grand Entrance Hall and Corridor of the Hospital.

Further information can be obtained of the Hon. Secretaries.

ST. THOMAS'S HOSPITAL REPORTS.

VOL. XVIII., NEW SERIES,

EDITED BY

W. B. HADDEN, M.D., F.R.C.P., AND
W. ANDERSON, F.R.C.S.,

Will be Published in due Course.

It will contain contributions from Members of the Staff and others, together with the Statistical Reports of the Hospital, by the Medical and Surgical Registrars, to December 31st, 1888.

The New Series commenced in 1870, and complete Sets may still be had.

Intending Subscribers are requested to communicate with Mr. G. RENDLE, the Secretary of the Medical School, at the Hospital, to whom P.O. Orders on the Westminster Bridge Office are to be made payable.

PRICE OF THE VOLUME (*including Postage or delivery*):—

To Subscribers in Great Britain and Countries within the Postal Union .. .. 6*s.* 0*d.*

To Non-Subscribers do. do. .. .. 7*s.* 6*d.*

SEPTEMBER, 1889.

1	S	Eleventh Sunday after Trinity.
2	M	
3	Tu	House Officers, &c., commence duty. [Dresserships.
4	W	Last day for applications for Clinical Clerkships and
5	Th	
6	F	
7	S	
8	S	Twelfth Sunday after Trinity.
9	M	
10	Tu	
11	W	
12	Th	
13	F	
14	S	
15	S	Thirteenth Sunday after Trinity.
16	M	
17	Tu	
18	W	Meeting to appoint Clinical Clerks and Dressers.
19	Th	
20	F	
21	S	St. Matthew.
22	S	Fourteenth Sunday after Trinity.
23	M	
24	Tu	
25	W	
26	Th	Entrance Scholarships Examination.
27	F	
28	S	
29	S	Fifteenth Sunday after Trinity. Michaelmas Day.
30	M	Last day for Essay for Grainger Prize. Last day for [Certs. for M.B. Exam., Univ. Lond.

Preliminary Examination in Arts of the Society of Apothecaries held this month.
The Hospital Entrance Science Scholarships Examination takes place during the last week of this month.

OCTOBER, 1889.

1	Tu	Introductory Address, 3 P.M. Annual Dinner. Clinical
2	W	[Clerks and Dressers commence duty.
3	Th	
4	F	
5	S	
6	S	Sixteenth Sunday after Trinity.
7	M	
8	Tu	
9	W	
10	Th	
11	F	
12	S	
13	S	Seventeenth Sunday after Trinity.
14	M	
15	Tu	
16	W	
17	Th	
18	F	St. Luke.
19	S	
20	S	Eighteenth Sunday after Trinity.
21	M	
22	Tu	
23	W	
24	Th	
25	F	
26	S	
27	S	Nineteenth Sunday after Trinity.
28	M	St. Simon and St. Jude. Univ. Lond. M.B. Exam.
29	Tu	
30	W	
31	Th	

The Registration and Museum Committees meet during this month.

The Primary Examination of the Society of Apothecaries is held Quarterly, in the months of October, January, April, and July. The Final is held monthly; the Surgical part commences on the second Wednesday, and the Medical on the Monday following.

First, Second, and Third Examinations of the Examining Board in England are held this month.

NOVEMBER, 1889.

1	F	All Saints.
2	S	
3	S	Twentieth Sunday after Trinity.
4	M	Entry for M.D. and M.S. Exams. Univ. Lond.
5	Tu	*Notice*—30th, last day for applications for Medical and [Surgical Registrarships.
6	W	Last day for applications for House Offices, &c.*
7	Th	
8	F	
9	S	Prince of Wales born, 1841.
10	S	Twenty-first Sunday after Trinity.
11	M	
12	Tu	
13	W	Meeting to appoint House Officers, &c.
14	Th	
15	F	
16	S	
17	S	Twenty-second Sunday after Trinity.
18	M	Last day for Certs. for B.S. Exam., Univ. Lond.
19	Tu	Univ. Lond. M.B. Pass list published.
20	W	Univ. Lond. M.B. Honours Exam.
21	Th	
22	F	
23	S	
24	S	Twenty-third Sunday after Trinity.
25	M	
26	Tu	
27	W	
28	Th	
29	F	
30	S	Saint Andrew. Last day for applications for Medical [and Surgical Registrarships.

Examinations for the Fellowship of the Royal College of Surgeons of England held this month.

* *Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

DECEMBER, 1889.

1	S	Advent Sunday.
2	M	Univ. Lond. M.D. and M.S. Exam. [B.S. Exam.
3	Tu	House Officers, &c., commence duty. Univ. Lond
4	W	Last day for applications for Clinical Clerkships and
5	Th	[Dresserships.
6	F	
7	S	
8	S	Second Sunday in Advent.
9	M	
10	Tu	
11	W	Meeting to appoint Clinical Clerks and Dressers.
12	Th	
13	F	Univ. Lond. M.D. List published.
14	S	
15	S	Third Sunday in Advent.
16	M	Last day for Entry for Matriculation Univ. Lond.
17	Tu	
18	W	
19	Th	1st Sessional Examination commences.
20	F	
21	S	Saint Thomas.
22	S	Fourth Sunday in Advent.
23	M	Last day for Entry for Prel. Sci. and Int. Med. Exam.
24	Tu	[Univ. Lond.
25	W	Christmas Day.
26	Th	Saint Stephen.
27	F	Saint John.
28	S	Holy Innocents.
29	S	First Sunday after Christmas.
30	M	
31	Tu	

University of Cambridge First, Second, and Third M.B. Examinations are held this month.

Preliminary Examination in Arts of the Society of Apothecaries held this month.

Examinations for Diploma in Public Health of the Royal Colleges of Physicians and Surgeons held this month.

JANUARY, 1890.

1	W	Circumcision.
2	Th	
3	F	
4	S	
5	S	Second Sunday after Christmas.
6	M	Epiphany.
7	Tu	Clinical Clerks and Dressers commence duty.
8	W	
9	Th	
10	F	
11	S	
12	S	First Sunday after Epiphany.
13	M	Univ. Lond. Matriculation Examination.
14	Tu	
15	W	
16	Th	
17	F	
18	S	
19	S	Second Sunday after Epiphany.
20	M	Univ. Lond. Prelim. Scientific (M.B.) Exam. and
21	Tu	Intermd. Exam. in Medicine.
22	W	
23	Th	
24	F	
25	S	Conversion of St. Paul.
26	S	Third Sunday after Epiphany.
27	M	
28	Tu	
29	W	
30	Th	
31	F	

First, Second, and Third Examinations of the Examining Board in England are held this month.

The Registration and Museum Committees meet during this month.

FEBRUARY, 1890.

1	S	
2	S	Septuagesima Sunday.
3	M	
4	Tu	
5	W	Last day for applications for House Offices, &c.*
6	Th	
7	F	
8	S	
9	S	Sexagesima Sunday.
10	M	Queen Victoria married, 1840.
11	Tu	
12	W	Univ. Lond. Prel. Sci. (M.B.) List published. Meeting
13	Th	[to appoint House Officers, &c.
14	F	
15	S	
16	S	Quinquagesima Sunday.
17	M	
18	Tu	Univ. Lond. Int. Med. Pass List published.
19	W	Ash Wednesday. Univ. Lond. Matric. List published.
20	Th	
21	F	
22	S	
23	S	First Sunday in Lent.
24	M	St. Matthias.
25	Tu	
26	W	
27	Th	
28	F	

* *Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

MARCH, 1890.

1	S	
2	S	Second Sunday in Lent.
3	M	
4	Tu	House Officers, &c., commence duty.
5	W	Last day for applications for Clinical Clerkships and
6	Th	[Dresserships.
7	F	
8	S	
9	S	Third Sunday in Lent.
10	M	Prince of Wales married, 1863.
11	Tu	
12	W	Meeting to appoint Clinical Clerks and Dressers.
13	Th	
14	F	
15	S	
16	S	Fourth Sunday in Lent.
17	M	
18	Tu	
19	W	
20	Th	
21	F	
22	S	Sessional Examination commences.
23	S	Fifth Sunday in Lent.
24	M	
25	Tu	Annunciation. Lady Day.
26	W	
27	Th	
28	F	
29	S	
30	S	Palm Sunday. [Reports for Solly Medal (1890).
31	M	Registrar's Report for last year due. Last day for

Preliminary Examination in Arts of the Society of Apothecaries held this month.

APRIL, 1890.

1	Tu	Clinical Clerks and Dressers commence duty.
2	W	
3	Th	
4	F	Good Friday.
5	S	
6	S	Easter Sunday.
7	M	Bank Holiday.
8	Tu	
9	W	
10	Th	
11	F	
12	S	
13	S	First Sunday after Easter. Low Sunday.
14	M	
15	Tu	
16	W	
17	Th	
18	F	
19	S	
20	S	Second Sunday after Easter.
21	M	
22	Tu	
23	W	
24	Th	
25	F	St. Mark.
26	S	
27	S	Third Sunday after Easter.
28	M	
29	Tu	
30	W	

First, Second, and Third Examinations of the Examining Board in England are held this month.

The Examinations for the Mead and Cheselden Medals take place this month.

The Annual Inspection of the Museum and meeting of Museum Committee take place during this month.

The Registration Committee meets during this month.

MAY, 1890.

1	Th	St. Philip and St. James. Summer Session commences.
2	F	
3	S	
4	S	Fourth Sunday after Easter.
5	M	
6	Tu	
7	W	Last day for applications for House Offices, &c.*
8	Th	
9	F	
10	S	
11	S	Fifth Sunday after Easter. Rogation Sunday.
12	M	First Stone of St. Thomas's New Hospital laid by H.M.
13	Tu	[the Queen, 1868. Last day for Entry for Matric.
14	W	Meeting to appoint House Officers, &c. [Univ. Lond.
15	Th	Ascension Day. Holy Thursday.
16	F	
17	S	
18	S	Sunday after Ascension Day.
19	M	
20	Tu	
21	W	
22	Th	
23	F	
24	S	Queen Victoria born, 1819.
25	S	Whit Sunday.
26	M	Bank Holiday. No Lectures.
27	Tu	
28	W	
29	Th	
30	F	
31	S	

Examinations for the Fellowship of the Royal College of Surgeons of England and Univ. Camb. Third M.B. Exam. held this month.

* *Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

JUNE, 1890.

1	℔	Trinity Sunday.
2	M	
3	Tu	House Officers, &c., commence duty.
4	W	Last day for applications for Clinical Clerkships and
5	Th	[Dresserships.
6	F	
7	S	
8	℔	First Sunday after Trinity.
9	M	Univ. Lond. Matric. Exam.
10	Tu	
11	W	St. Barnabas. Meeting to appoint Clinical Clerks and
12	Th	[Dressers.
13	F	
14	S	
15	℔	Second Sunday after Trinity.
16	M	Last day for Entry for Int. Med. Exam. Univ. Lond.
17	Tu	
18	W	
19	Th	
20	F	Queen's Accession.
21	S	New St. Thomas's Hospital opened by H. M. the
		[Queen, 1871.
22	℔	Third Sunday after Trinity.
23	M	Last day for Entry for Prel. Sci. (M.B.) Exam. Univ.
24	Tu	St. John Baptist. Midsummer Day. [Lond.
25	W	
26	Th	
27	F	
28	S	Queen Victoria crowned, 1838.
29	℔	Fourth Sunday after Trinity. St. Peter.
30	M	

The Harveian Oration is delivered at the Royal College of Physicians annually in the month of June.

Doctor of Science Examination at London University takes place within the first 21 *days of June.*

Distribution of Prizes for past Sessions during this month.

Univ. Camb. First and Second M.B. Examinations are held within the first 14 *days of June.*

Preliminary Examination in Arts of the Society of Apothecaries held this month.

Examinations for Diploma in Public Health of the Royal Colleges of Physicians and Surgeons held this month.

JULY, 1890.

1	Tu	Clinical Clerks and Dressers commence duty.
2	W	
3	Th	
4	F	
5	S	
6	S	Fifth Sunday after Trinity.
7	M	
8	Tu	
9	W	Last day for applications for House Offices, &c., for
10	Th	[September.*
11	F	
12	S	
13	S	Sixth Sunday after Trinity.
14	M	Univ. Lond. Int. Med. Exam.
15	Tu	
16	W	Meeting to appoint House Officers, &c., for September.
17	Th	[Univ. Lond. Matric. List published.
18	F	
19	S	
20	S	Seventh Sunday after Trinity.
21	M	Univ. Lond. Prelim. Scientific (M.B.) Exam.
22	Tu	
23	W	
24	Th	Sessional Examination commences.
25	F	St. James.
26	S	
27	S	Eighth Sunday after Trinity.
28	M	
29	Tu	
30	W	
31	Th	

First, Second, and Third Examinations of the Examining Board in England are held this month.

The Registration and Museum Committees meet during this month.

* *Applications for these appointments to be made to the Medical Secretary, by letter, stating the Candidate's qualifications, the offices which he has previously held in the Hospital, and the number of Maternity Cases attended.*

AUGUST, 1890.

1	F	
2	S	
3	S	Ninth Sunday after Trinity.
4	M	Bank Holiday.
5	Tu	
6	W	
7	Th	
8	F	
9	S	
10	S	Tenth Sunday after Trinity.
11	M	
12	Tu	Univ. Lond. Int. Med. Pass List published.
13	W	Univ. Lond. Prelim. Sci. Pass List published.
14	Th	
15	F	
16	S	
17	S	Eleventh Sunday after Trinity.
18	M	
19	Tu	
20	W	
21	Th	
22	F	
23	S	
24	S	Twelfth Sunday after Trinity. St. Bartholomew.
25	M	
26	Tu	
27	W	
28	Th	
29	F	
30	S	
31	S	Thirteenth Sunday after Trinity.

SEPTEMBER, 1890.

1	M	
2	Tu	House Officers, &c., commence duty. [Dresserships.
3	W	Last day for applications for Clinical Clerkships and
4	Th	
5	F	
6	S	
7	S	Fourteenth Sunday after Trinity.
8	M	
9	Tu	
10	W	
11	Th	
12	F	
13	S	
14	S	Fifteenth Sunday after Trinity.
15	M	
16	Tu	
17	W	Meeting to appoint Clinical Clerks and Dressers.
18	Th	
19	F	
20	S	
21	S	Sixteenth Sunday after Trinity. St. Matthew.
22	M	
23	Tu	
24	W	
25	Th	
26	F	
27	S	
28	S	Seventeenth Sunday after Trinity.
29	M	Michaelmas Day.
30	Tu	Last day for Essay for Grainger Prize.

Preliminary Examination in Arts of the Society of Apothecaries held this month.
The Hospital Entrance Science Scholarships Examination takes place during the last week of this month.

LIST OF STUDENTS

WHO HAVE OBTAINED

Honours in the Annual Examinations.

w *refers to Winter and* s *to Summer Session.*

The Addresses are those given at the time of Entry.

Abbott (F. C.), Gorleston.
w 1884–5, 1st Year Student, 1st Entrance Science Scholarship. The Wm. Tite Scholarship.
s 1885. 1st Year Student, 1st Coll. Prize.
w 1885–6. 2nd Year Student, The Peacock Scholarship.
w 1886–7. 3rd Year Student, 2nd tenure of Peacock Scholarship with 1st College Prize.
w 1887–8. 4th Year Student, The Cheselden Medal;
Treasurer's Gold Medal.

Acland (T. D.),* Oxford.
w 1877–8. 3rd Year Physical Society's Prize. Paper published in Hospital Reports, Vol. VIII.
w 1878–9. 4th Year Student. The Mead Medal.

Addy (B.), West Deeping, Lincolnshire.
1869. 1st Year Student, 1st College Prize; Physical Society's 1st Year's Prize.
1870. 2nd Year Student, 1st Coll. Prize; Physical Society's 2nd Year's Prize.
1871. 3rd Year Student, 1st Coll. Prize; Prosector's Prize;
Treasurer's Gold Medal.

Allingham (W.),† Bermondsey.
1852. Descriptive Anatomy, Hon. Cert.; Chemistry, Hon. Cert.
1853. Midwifery, Hon. Cert.
1854. Medicine, Hon. Cert.; Descriptive Anatomy, Prize; Midwifery, Hon. Cert.; Physical Society's Essay, Prize; Surgery, Prize; Physiology, Hon. Cert.
1855. Medicine, Prize; Descriptive Anatomy, Hon. Cert.; Physiology, Hon. Cert.; Clinical Medicine, President's Prize; Clinical Medicine, Treasurer's Prize.

Anderson (W.),‡ Clapham, Surrey.
1865. 1st Year Student, 3rd Coll. Prize.
1866. 2nd Year Student, 3rd Coll. Prize.
1867. 3rd Year Student, 1st Coll. Prize; Physical Society's 3rd Year's Prize; Cheselden Medal.

Armstrong (H. G.), Reading.
s 1872. 1st Year Student, Hon. Cert.
w1874. 3rd Year Student, 3rd Coll. Prize.

Atkinson (F. P.), Kew.
1861. 1st Year Matriculation Examination—Classics and Mathematics, Hon. Cert.

Atkinson (J.), Kirkby-Lonsdale.
1853. Chemistry, Hon. Cert.

Aveling (C. T.), Shacklewell.
1863. Matriculation Examination—Physics and Natural History, 1st College Prize;
1st Year Student, 1st College Prize.
1864. 2nd Year Student, 2nd College Prize.
1865. 3rd Year Student, 3rd College Prize.

Bailey (J. H. T.), Greenwich.
1843. Materia Medica, Hon. Cert.

Bain (J.)
1855. Midwifery, Hon. Cert.

Ballance (C. A.),§ Lower Clapton.
w 1875-6. 1st Year Student, Hon. Cert.
w 1876-7. 3rd Year Student, 3rd College Prize, and Physical Society's 3rd Year's Prize;
1880. The Solly Medal and Prize.

Banks (A.), Clapham.
w 1887–8. 1st Year Student, 1st Coll. Prize.

Barker (F. R.), Aldershot.
w 1875. Prosector's Prize.

Barron (H. J.), Guilford Street, Russell Square.
w 1877-8. 2nd Year Student, Prosector's Prize.

---

* Assistant Physician, St. Thomas's Hospital. Assistant Physician, Brompton Hospital.

† Surgeon to St. Mark's Hospital. Late Surgeon to Great Northern Hospital, formerly Surgical Tutor, Demonstrator of Anatomy, and Surgical Registrar at St. Thomas's Hospital.

‡ Assistant Surgeon to, and Joint Lecturer on Anatomy at, St. Thomas's Hospital. Examiner in Anatomy for the Fellowship of the Royal College of Surgeons; formerly Demonstrator of Anatomy, and Surgical Registrar at St. Thomas's Hospital, late Examiner in Anatomy, Royal College of Physicians, Medical Officer to H.B.M. Legation in Japan, and Medical Director of the Japanese Naval Medical College, Tokio.

§ Assistant Surgeon for Diseases of the Ear, St. Thomas's Hospital, Senior Assistant Surgeon to the West London Hospital, Assistant Surgeon to the Hospital for Sick Children, Great Ormond Street. Late Surgical Registrar and Demonstrator of Anatomy at St. Thomas's Hospital.

Barwell (R.),* Norwich.
1847. Medicine, Hon. Cert.;
Midwifery, Hon. Cert.
1848. Physical Society's Essay, Treasurer's Prize;
Physiology and Anatomy, Hon. Cert.,
Midwifery, Hon. Cert.;
Dresser's Surg. Repts., Hon. Cert.
1850. Clinical Medicine, Prize.

Bateson (J. M.), Kirkby-Lonsdale.
1855. Chemistry, Hon. Cert.

Battle (W. H.),† Hanworth, Lincolnshire.
s 1874. Hon. Cert.
w 1875. 2nd Year Student, 3rd College Prize.
w 1876-7. 3rd Year Student, The First Solly Medal and Prize.

Beal (P.), Plymouth.
1844. Chemistry, 2nd Prize.

Beardsley (A.), Shipley, Derby.
1843. Midwifery, 2nd Prize.

Bedford (R. J.),‡ Sleaford.
1858. Midwifery, Hon. Cert.

Benwell (H. D.), Greenwich.
1843. Chemistry, 2nd Prize.
1845. Physiology and Anatomy, Medal.
1847. Clinical Medical Reports, Prize;
Gen. Proficiency, Trea. Medal.

Bell (C. N.), Rochester.
1867. 3rd Year Student, 3rd Coll. Prize.

Bell (J. V.), Rochester.
1859. 1st Year Student, Treasurer's 2nd Prize; Matriculation Examination—Classics and Mathematics, Hon. Cert.
1860. 2nd Year Student, Hon. Cert.
1861. 3rd Year Student, 3rd Coll. Prize.

Bernays (H. L.), Chatham.
w 1873. Prosector's Prize.

Bernays (A. V.), Great Stanmore.
■ 1876. 1st Year Student, Hon. Cert.
w 1880–81. 3rd Year Student, 1st Coll. Prize.

Bickle (L. W.), St. Leonard's-on-Sea.
■ 1878. 1st Year Student, 3rd Coll. Prize;
s 1879. 2nd Year Student, 1st Coll. Prize.

Biddle (D.), Wotton-under-Edge.
1860. 1st Year Student, Trea. Prize;
Matriculation Exam.—Prize.
1861. 2nd Year Student, Hon. Cert.
1862. 3rd Year Student, Hon. Cert.

Bidwell (H.), Ely.
w 1883–4. 4th Year Student, qualified for Mead Medal.

Bidwell (L. A.), Lee.
w 1885–6. 4th Year Student, qualified for Cheselden Medal.

* Consulting Surgeon to Charing Cross Hospital.

† Assistant Surgeon to the Royal Free Hospital, and to the East London Hospital for Children and Women, Shadwell. Late Resident Assistant Surgeon, and Surgical Registrar, St. Thomas's Hospital.

‡ Late Assistant-Surgeon at the "Dreadnought" Hospital Ship.

Birtwell (H. H.), Enfield, Lancashire.
1865. 3rd Year Student, Hon. Cert.

Black (J.), Kentish Town.
w 1872. 2nd Year Student, Prosector's Prize.

Black (W. S.), Chesterfield, Derby.
1855. Midwifery, Hon. Cert.;
Medicine, Hon. Cert.

Blackett (W. C.), Durham.
1851. Descriptive Anatomy, Hon. Cert.

Blades (C. C.).
1855. Midwifery, Hon. Cert.

Bone (W.), Camberwell.
1857. 1st Year Student, Trea. 1st Prize.
1858. 2nd Year Student, Trea. 1st Prize.

Bonser (J. H.), Sutton-in-Ashfield.
1871. 3rd Year Student, 2nd Coll. Prize;
Cheselden Medal.

Boulger (J.), Gravesend.
1870. 1st Year Student, Sir Wm. Tite's Scholarship.
1871. 2nd Year, Sir W. Tite's Scholarship.
w 1872. 3rd Year, Sir W. Tite's Scholarship.

Box (C. R.), Camberwell.
w 1885–6. 1st Year Student, 2nd Coll. Prize.

Bowen (E.), Llyn Gwair, Pembroke.
1847. Descriptive and Surgical Anatomy, Hon. Cert.;
Materia Medica, Hon. Cert.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Physiology and Anatomy, Ho. Cert.;
Botany, Hon. Cert.;
Comparative Anatomy, Hon. Cert.

Bown (J. Y.), America.
1848. Descriptive and Surgical Anatomy, Hon. Cert.

Boycott (A. N.), Rugeley.
w 1887–8. 4th Year Student, qualified for Cheselden Medal.

Brake (J.), Holt, Wilts.
1851. Matriculation Scholarship, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
1st Year Student, Scholarship;
Chemistry, Hon. Cert.
1852. 2nd Year Student, Scholarship;
Physiology, Prize;
Materia Medica, Hon. Cert.
Botany, Hon. Cert.;
Medicine, Hon. Cert.
1853. 3rd Year Student, Scholarship;
Clinical Medicine, Trea. Prize;
Midwifery, Prize;
Forensic Medicine, Prize.

Bristowe (J. S.),§ Camberwell.
1847. Medicine, Hon. Cert.;
Physiology and Anatomy, Hon. Cert.;
Descriptive and Surgical Anatomy, Prize.

§ Physician to, and Joint Lecturer on Medicine at, St. Thomas's Hospital. Examiner in Medicine, University of Oxford. Late Lecturer on General Pathology.

1848 Descriptive and Surgical Anatomy, Hon. Cert.;
Physiology and Anatomy, Prize;
Practical Chemistry, Prize;
Botany, Prize;
Midwifery, Hon. Cert.;
Comparative Anatomy, Prize;
Surgery, Prize;
General Proficiency, Treasurer's Medal.

Britton (T.), Doncaster.
1861. 1st Year Student, Hon. Cert.

Brock (J.), Northwich.
w 1872. 1st Year Student, 2nd Coll. Prize.
s 1872. Hon. Cert.

Brockatt (A. A.), Denmark Hill.
w 1884–5. 4th Year Student, qualified for the Mead Medal.

Brown (F. G.), London.
1860. 1st Year Student, Hon. Cert.
1861. 2nd Year Student, 3rd Coll. Prize.
1862. 3rd Year Student, 3rd Coll. Prize.

Brown (G. D.), Croydon.
1851. Physiology, Hon. Cert.;
Botany, Prize;
Surgery, Hon. Cert.;
1852. Physiology, Hon. Cert.;
Physical Society's Essay, Treasurer's Prize;
Medicine, Hon. Cert.;
Pathology, Prize.

Brown (T. J. E.), Dorchester.
1848. Practical Midwifery, Hon. Cert.

Bucknill (E. R.), Bedford.
1855. 1st Year Student, Scholarship;
Midwifery, Hon. Cert.;
Chemistry, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Materia Medica, Hon. Cert.

Bull (J.), Norwood, Surrey.
1848. Midwifery, Hon. Cert.

Burden (H.), Belfast.
w 1886–7. 1st Year Student, The William Tite Scholarship.
s 1887. 1st Year Student, 2nd Coll. Prize.
w 1887–8. 2nd Year Student, 2nd Coll. Prize.

Butler (W.), Stoke Newington.
1845. Materia Medica, Hon. Cert.

Caiger (F. F.), Gloucester-st., S.W.
w 1879–80. 1st Year Student, 3rd Coll. Prize.
w 1880–81. 2nd Year Student, 3rd Coll. Prize.
w 1882–83. 4th Year, the Mead Medal.

Cann (R. T.), Plymouth.
s 1882. 2nd Year Student. 1st Coll. Prize.
s 1883. 3rd Year Student. 2nd Coll. Prize.

Carpenter (A.),* Rothwell.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Chemistry Prize;
Materia Medica, Hon. Cert.;
Matriculation Scholarship, Prize.
1849. Physiology Hon. Cert.;
Midwifery, Hon. Cert.;
Descriptive Anatomy, 1st Prize;
Medicine, 2nd Prize.

* Examiner in State Medicine, University of Cambridge. Late Lecturer on State Medicine at St. Thomas's Hospital.

1850. Physiology, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Botany, Prize;
Medicine, Prize;
Surgery, Prize; [Medal.
General Proficiency, Treasurer's
1851. (Accoucheur) Midwifery, Prize;
Essay on Chorea, Mr. N. Smith's Prize.
1852. Surgical Reports, President's Prize;
Medical Reports, Dr. Roots' Prize;
Ophthalmic Reports, a Governor's Prize;
Clinical Medicine, Senior Prize.

Carpenter (A. B.), Croydon.
w 1876–7. 1st Year Student, Hon. Cert.;

Carpenter (G. A.), Streatham.
w 1880–81. 1st Year Student, 3rd Coll. Prize.
s 1881. 1st Coll. Prize.
w 1881–2. 2nd Year Student, 3rd Coll. Prize.
Prosector's Prize.

Carr (J. T.), Bombay.
1844. Surgery, Prize.

Castle (H.), Newport, I. of Wight.
w 1874–5. 1st Year Student, 2nd Coll. Prize.
s 1875. 3rd College Prize.
w1876–7. Physical Society's 3rd Year's Prize.

Caudle (A.W.W.), Henfield, Sussex.
1858. Clinical Medicine, Prize.

Chaldecott (C. W.), Dorking.
1849. Descriptive Anatomy, Hon. Cert.
Chemistry, Hon. Cert.;
Materia Medica, 2nd Prize;
1st Year Student, Scholarship.
1850. Physiology, Hon. Cert.
Surgery, Prize.
1851. Physiology, Prize;
Descriptive Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Physical Society's Essay, Treasurer's Prize;
Surgery, Hon. Cert.;
General Proficiency, Treasurer's Silver Medal.

Chaldecott (T. A.), Newington
1848. Descriptive Surgical Anatomy, Hon.
Chemistry, Hon. Cert.; [Cert.;
Botany, Hon. Cert.;
Materia Medica, Hon. Cert.;
Comparative Anat., Hon. Cert.;
Matriculation Scholarship, Prize;
Practical Chemistry, Hon. Cert.
1849. Physiology, Hon. Cert.;
Midwifery, Hon. Cert.;
Surgery, 2nd Prize;
Medicine, Hon. Cert.
1850. Physiology, Hon. Cert.;
Forensic Medicine, Prize
Pathology, Prize;
Medicine, Hon. Cert.;
Surgery, Hon. Cert.

Chapman (C. E.), Preston.
1855. Midwifery, Hon. Cert.;
Materia Medica, Hon. Cert.
1857. Clinical Assistant, Prize;
Physical Society's Essay, Prize.

Charpentier (A. E.).
1882–3. 4th Year, The Mead Medal Exam., Special Mention and Hon. Cert.

Cherry (A. H.), Clapham.
1845. Clinical Medicine, Hon. Cert.

CHIPPERFIELD (W. N.), Reading.
1852. 1st Year Student, Scholarship; Descriptive Anatomy, Prize.
1853. 2nd Year Student, Scholarship. Physiology, Prize; Descriptive Anatomy, Prize; Midwifery, Prize; Physical Society's Essay, Prize; Medicine, Prize; Surgery, Prize.
1854. 3rd Year Student, Scholarship; Medicine, Prize; Descriptive Anatomy, Hon. Cert.; Midwifery, Prize; Physical Society's Essay, Treasurer's Prize; Forensic Medicine, Prize; Chemistry, Hon. Cert.; Comparative Anatomy, Prize; Pathology, Prize; Surgery and Surgical Anatomy, Cheselden Medal; Clinical Medicine, Treasurer's Prize, Physiology, Prize; [Medal. General Proficiency, Treasurer's

CLAPTON (E.),* Stamford.
1851. Matriculation Scholarship, Hon. Cert.; 1st Year Student, 1st Scholarship; Descriptive Anatomy, Prize; Chemistry, Prize.
1852. 2nd Year Student, Scholarship; Physiology, Prize; Materia Medica, Prize; Botany, Prize; Medicine, Hon. Cert.
1853. 3rd Year Student, Scholarship; Physiology, Hon. Cert.; [Prize; Clinical Medicine, Treasurer's Midwifery, Hon. Cert.; Physical Society's Essay, Treasurer's Prize; Medicine, Hon. Cert.; Forensic Medicine, Hon. Cert.; Chemistry, Hon. Cert.; Surgery, Hon. Cert.
1854. Ophthalmic Reports, Governor's Prize; Clinical Medicine, Mr. N. Smith's Prize.

CLAPTON (W.), Stamford.
1855. Midwifery, Hon. Cert.; Descriptive Anatomy, Hon. Cert.; Materia Medica, Prize.
1856. Clinical Medicine, Prize.
1858. Midwifery, Hon. Cert.

CLARKE (A.), Dorking.
1856. 1st Year Student, Treasurer's 2nd Prize.

CLARK (J. H.), Jamaica.
1867. 2nd Year Student, Physical Society's 2nd Year's Prize.

CLARKSON (J. W.), Surbiton.
w 1872. 2nd Year Student, 3rd Coll. Prize.
w 1873. 3rd Year Student, 2nd Coll. Prize; Surgery and Surgical Anatomy, Hon. Cert.

CLEGHORN (G.), Bedford.
1872. 3rd Year Student, Hon. Cert.

* Late Physician to, and Lecturer on Materia Medica at, St. Thomas's Hospital. Physician to the Magdalen Hospital.

CLUTTERBUCK (M. C.), Bath.
w 1886–7. 1st year Student, 2nd Entrance Science Scholarship.

COGGINS (T.), Hayford, Woodstock.
1847. Chemistry, Hon. Cert.
1848. Descriptive and Surgical Anatomy, Hon. Cert.; Midwifery, Hon. Cert.
1849. Midwifery, Hon. Cert.; Medicine, Hon. Cert.
1850. Surgical Reports, Prize; (Accoucheur) Midwifery, Hon. Cert.

COLBY (W. T.), Malton, York.
1849. Descriptive Anatomy, Hon. Cert.; Midwifery, Hon. Cert.

COLLIER (T. P.), Worship Square.
1847. Practical Midwifery, Prize.

COMPLIN (E. J.), Charterhouse Sq.
1851. Clinical Medicine, Prize; Medical Cases, President's Prize; Surgery, Hon. Cert.
1852. Midwifery, Hon. Cert.; Pathology, Hon. Cert.

COOK (S. B.), Cape of Good Hope.
s 1883. 1st year Student, 2nd Coll. Prize.

COOK (W.), Gainsboro'.
1844. Chemistry, Hon. Cert.; Materia Medica, Hon. Cert.

COOKE (C. W.), Regent's Park.
w 1883–4. 1st year Student, 1st Entrance Science Scholarship.

COOKE (J.), Stamford.
1855. Comparative Anatomy, Prize; Midwifery, Hon. Cert.; Physiology, Hon. Cert.

COOPER (H. S.), Brightlingsea.
s 1887. 2nd Year Student, 2nd Coll. Prize.

COPELAND (W. H. L.), South Kensington.
w 1887-8. 4th Year Student, qualified for the Mead Medal.

CORY (R.),† Carlisle.
1870. Physical Society's 3rd Year's Prize.

COUSINS (J. W.), Portsea.
1854. Descriptive Anatomy, Hon. Cert.; Chemistry, Hon. Cert.
1855. Surgery, Prize; Midwifery, Prize; Midwifery, Hon. Cert.
1856. Clinical Medicine, Prize; Surgery and Surgical Anatomy, Cheselden Medal.

COWEN (P.), Kennington.
1862. 1st Year Student, 2nd Coll. Prize.
1863. 2nd Year Student, 2nd Coll. Prize.
1864. 3rd Year Student, 2nd Coll. Prize.

COWEN (T. P.), Upper Holloway.
w 1884–5. 1st Year Student, ½ 1st and 2nd Coll. Prizes.
1885, 1st Year Student, 2nd Coll. Prize.
w 1885-6. 2nd Year Student, 1st. Coll. Prize.
s 1886. 2nd Year Student, 1st College Prize.
w 1886–7. 3rd Year Student, 2nd Coll. Prize.
w 1887–8. 4th Year Student, qualified for the Mead Medal.

† Assistant Obstetric Physician to, and Joint Lecturer on Forensic Medicine at, St. Thomas's Hospital.

Cox (E.), Maiden Newton, Dorsetshire.
1866. 1st Year Student, 3rd Coll. Prize.
1868. 3rd Year Student, 2nd Coll. Prize.

Coxwell (C. F.), Brighton.
1880. 4th Year Student, the Mead Medal.

Crick (S. A.), Cosby-hill, Leicestershire.
s 1875. 1st Year Student, Hon. Cert.
w 1875–6. Prosector's Prize.
w 1876-7. 3rd Year Student, 3rd Coll. Prize.

Croft (J.),* Clapton.
1851. Descriptive Anatomy, Hon. Cert.
1853. Midwifery, Hon. Cert.

Crofts (W. C.), Rowston, Lincoln.
1855. Surgery, Hon. Cert.;
Midwifery, Hon. Cert.

Crosby (T. B.), Gosberton, Lincoln.
1851. Physiology, Prize;
Descriptive Anatomy, Prize;
Medicine, Prize;
Surgery, Prize.
1852. Physiology, Prize;
Descriptive Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Forensic Medicine, Prize;
Practical Chemistry, Prize;
Surgery, Hon. Cert.;
Surgery and Surgical Anatomy, *Bronze* Cheselden Medal;
Comparative Anatomy, Prize.

Crossman (J.), Redruth.
1871. Physical Society's 1st Year's Prize.
1872. Physical Society's 2nd Year's Prize.
1873. Physical Society's 3rd Year's Prize.

Crowdy (F. D.), Bath.
w 1884–5. 4th Year Student, the Mead Medal.

Davies (D.), Carmarthenshire.
1843. Chemistry, 1st Prize;
Midwifery, Hon. Cert.;
Materia Medica, Prize.
1844. Medicine, Hon. Cert.;
Physiology and Anatomy, Hon. Cert.
1845. Clinical Surgical Reports, Medal.

Davies (D. S.), Bristol.
1875–6. Physical Society's 1st Year's Prize.

Day (W. H.), Norwich.
1844. Surgery, Prize;
Physical Society's Essay, Hon. Cert.;
Dresser's Clinical Surgery, Prize.

Deck (J. F.), Nelson, New Zealand.
1860. 1st Year Student, 1st Coll. Prize.
1861. 2nd Year Student, 1st Coll. Prize;
Physical Society's Prize.
1862. 3rd Year Student, 1st Coll. Prize;
Physical Society's Prize;
Cheselden Medal;
Treasurer's Gold Medal.

* Member of Council Royal College of Surgeons. Surgeon to, and Special Lecturer on Clinical Surgery at, St. Thomas's Hospital; late Lecturer on Practical Surgery, and Assistant Demonstrator of Anatomy. Examiner in Surgery, University of Durham.

Dickerson (S.H.), Hartest, Suffolk.
1853. Physiology, Hon. Cert.;
Materia Medica, Hon. Cert.;
Midwifery, Hon. Cert.;
Medicine, Hon. Cert.

Dixon (E. L.), Preston, Lancashire.
1852. 1st Year Student, Scholarship;
Chemistry, Hon. Cert.
1853. 2nd Year Student, Scholarship;
Physiology, Hon. Cert.;
Materia Medica, Prize;
Descriptive Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.;
Botany, Prize;
Medicine, Hon. Cert.
1854. 3rd Year Student, Scholarship;
Descriptive Anatomy, Hon. Cert.;
Practical Chemistry, Prize;
Physiology, Hon. Cert.

Dobson (N.C.),† Holbeach, Lincolnshire.
1865. 1st Year Student, 1st Coll. Prize.
1866. 2nd Year Student, 1st Coll. Prize.
1867. 3rd Year Student, 2nd Coll. Prize;
A Prize and Hon. Cert. for Proficiency in Surgery and Surgical Anatomy at the Cheselden Medal Examination;
Treasurer's Gold Medal.

Drake (A. J.), Kingsclere, Hants.
1870. 3rd Year Student, 1st Coll. Prize.

Drake (C. H.), Kingsclere, Hants.
1857. 1st Year Student, Hon. Cert.;
1858. 2nd Year Student, Treasurer's 1st Prize;
Clinical Medicine, 2nd Prize.
1859. 3rd Year Student, Hon. Cert.;
Surgery and Surgical Anatomy, Cheselden Medal;
General Proficiency, Treasurer's Medal.

Drake (T.), Kingsclere, Hants.
1858. 2nd Year Student, Treasurer's 1st Prize;
1859. 2nd Year Student, President's Prize.
1860. 3rd Year, 1st College Prize;
Surgery and Surgical Anatomy, Cheselden Medal;
General Proficiency, Treasurer's Medal.

Drew (G. F. A.), Plymouth.
1848. Descriptive and Surg. Anat. Prize;
Chemistry, Hon. Cert.;
Botany, Prize;
Comparative Anatomy, Hon. Cert.;
Practical Chemistry, Prize;
Gen. Proficiency, Hon. Cert.
1849. Physiology, 2nd Prize;
Midwifery, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Medicine, Hon. Cert.
1850. Physiology, Prize;
Descriptive Anatomy, Hon. Cert.
Medicine, Hon. Cert.;
Surgery, Hon. Cert.

Dukes (C.),‡ Dalston.
1865. 1st Year Student, Hon. Cert.
1867. 3rd Year Student, Hon. Cert.;
Prosector's Prize and Hon. Cert.

† Surgeon to the Bristol General Hospital and Lecturer on Surgery at the Bristol Medical School.

‡ Physician to Rugby School, and Senior Physician to Rugby Hospital.

Dukes (T. A.), Croydon.
w 1888-9. 4th Year Student, Qualified for Mead Medal.

Duncan (H.), London.
w 1882-3. 1st Year Student, 1st Entrance Science Scholarship, 1st Coll. Prize.
w 1883-4. 2nd Year Student, Prosector's Prize.

Duncan (W.),* Manchester.
w 1876-7. 1st Year Student, The William Tite Scholarship.
s 1877. 1st College Prize.
w 1877-8. 2nd Year Student, The Musgrove Scholarship.
w 1877-8. 2nd Year Physical Society's Prize.
s 1878. 1st College Prize.
w 1878-9. 2nd Tenure Musgrove Scholarship.
1st College Prize;
3rd Year Physical Society's Prize;
Grainger Testimonial Prize.
1880. 4th Year Student, The Cheselden Medal.
The Treasurer's Medal.
w 1881-2. The Solly Medal and Prize.

Dunman (G.), Camberwell.
1852. Chemistry, Hon. Cert.
1854. Midwifery, Hon. Cert.

Dyer (F. J.), Blackheath.
1847. Chemistry, Prize;
Materia Medica, Hon. Cert.;
1849. Physiology, Hon. Cert.;
Midwifery, 2nd Prize;
Medicine, Hon. Cert.

Eccles (C. H.), Brigg.
w 1884-5. 2nd Year Student, 1st Coll. Prize.
s 1885. 2nd Year's Student, 1st Coll. Prize.
w 1885-6. 3rd Year's Student, 1st Coll. Prize.
s 1886. 3rd Year Student, 1st College Prize.

Eddowes (J. H.), Loughboro'.
1843. Physiology and Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.;
Comparative Anatomy, Prize.
1844. Physiology and Anatomy, Hon. Cert.;
Clinical Medical Reports, Silver Medal.
1845. Clinical Medicine, Prize.

Eddowes (W. D.), Loughboro'.
1845. Descriptive and Surgical Anatomy, Prize.

Edmonds (S.), St. Helen's, Lancashire.
1852. Chemistry, Hon. Cert.
1853. Midwifery, Hon. Cert.;
Medicine, Hon. Cert.;
Surgery, Hon. Cert.
1854. Surgery and Surgical Anatomy, Hon. Cert.;
Clinical Medicine, Treas. Prize;
Clinical Medicine, Pres. Prize.
1855. Surgical Reports, Pres. Prize;
Clinical Medicine, Dr. Roots' Prize.

Edwards (S.), Littlehampton.
1855. Midwifery, Hon. Cert.

* Obstetric Physician to, and Lecturer on Obstetric Medicine and Practical Midwifery at, Middlesex Hospital. Obstetric Physician Royal Hospital for Women and Children. Examiner in Midwifery, Examining Board in England.

Edwards (V.), Woodbridge, Suffolk.
1843. Surgery, Prize.

Elborough (P. J.), Herne Bay.
1845. Chemistry, Hon. Cert.
1847. Medicine, Hon. Cert.;
Midwifery, Prize.
1848. Medicine, Hon. Cert.;
Surgery, Hon. Cert.;
Surgical Report, Pres. Prize.

Ellis (J.), Portsea, Hants.
1857. Clinical Assistant (Medicine), Hon. Cert.

Elwin (C. J.), London.
1855. Practical Midwifery, Prize.

Evans (C. W. de Lacey), Bangor.
w 1876-7. 3rd Year Student, The Solly Prize and Hon. Cert.

Fairbank (J.), Islington.
1865. 1st Year Student, Hon. Cert.
1866. 2nd Year Student, Prosec. Prize.

Farrant (S.), Collumpton, Devon.
1859. 2nd Year Student, Hon. Cert.
1860. 3rd Year Student, Hon. Cert.

Faulkner (R.), Camberwell.
1844. Botany, Prize;
Clinical Medical Reports, Hon. Cert.

Fawssett (F.), Surbiton.
w 1883-4. 1st Year Student, 2nd Entrance Science Scholarship. The William Tite Scholarship.
s 1884. 1st Year Student, 1st Coll. Prize.
w 1884-5. 2nd Year Student, The Musgrove Scholarship.
w 1885-6. 3rd Year Student, 2nd tenure of Musgrove Scholarship, with 3rd College Prize.
w 1886-7. 4th Year Student. The Cheselden Medal. Treasurer's Gold Medal.

Fell (W.), Kensington.
w 1878-9. 2nd Year Student Prosector's Prize.

Fenton (H. A. H.), Westminster.
w 1875-6. 1st Entrance Science Scholarship.
s 1876. 1st Year Student, 1st College Prize.

Fernie (A.), Yeldon, Beds.
1853. Physiology, Hon. Cert.;
Surgery, Hon. Cert.

Fernie (W. T.), Yeldon, Beds.
1852. Practical Midwifery, Prize;
Midwifery, Hon. Cert.

Fisher (T.), St. Michael's.
s 1872. 1st Year Student, Hon. Cert.
s 1873. 2nd Year Student, 2nd College Prize.
w 1874. 2nd Year Student, 3rd College Prize.
w 1875. 3rd Year Student, Surgery and Surgical Anatomy, Prize, and Cert. of Hon.

Fisher (J. H.), Exeter.
w 1887-8. 1st Year Student, The William Tite Scholarship.
s 1888. 1st Year Student, 1st Coll. Prize.
w 1888-9. 2nd Year Student, The Musgrove Scholarship.

Ford (G. W.), Cape of Good Hope.
w. 1880-81. 3rd Year Student, Prosector's Prize.

Fowler (J. T.), Winterton, Lincoln.
1854. Chemistry, Hon. Cert.
1855. Botany, Hon. Cert.

Fowler (J.), Winterton, Lincoln.
1859. 1st Year Student, Hon. Cert.
1860. 2nd Year Student, 2nd College Prize.
1861. 3rd Year Student, 2nd College Prize.

Freeman (D.), Kennington.
1859. Clinical Medicine, Prize.

Freeman (A. J.), Southsea, Hants.
1865. 3rd Year Student, Hon. Cert.

Fulton (J. A.), Stockwell.
1852. Botany, Hon. Cert.
1853. Practical Chemistry, Prize.

Furnival (F. H.), Nottingham.
w 1878–9. 1st Year Student;
The Wm. Tite Scholarship.

Gardner (E. B.), London.
1858. Matriculation Examination—Classics and Mathematics, Prize.

Garton (W.), St. Helier's.
1870. 2nd Year Student, 2nd College Prize.
Physical Society's 2nd Year's Prize.
1871. Physical Society's 3rd Year's Prize.

George (C. F.), Kirton-on-Lindsay.
1855. Midwifery, Hon. Cert.
1856. 2nd Year Student, Dr. Roots' Prize.
1857. 3rd Year Student, Hon. Cert.;
Surgery and Surgical Anatomy, Cheselden Medal.

Gervis (F. H.), Tiverton.
1861. 1st Year Matriculation Scholarship.—College Prize, 2nd Coll. Prize.
1862. 2nd Year Student, 1st College Prize.
1863. 3rd Year Student, Hon. Cert. and Physical Society's Prize.

Gervis (H.),* Tiverton.
1856. 1st Year Student, Trea. 1st Prize;
Matriculation Examination, Physics, &c., Prize.
1857. 2nd Year Student, Pres. Prize;
Physical Society's Essay, Prize.
1858. Clinical Assistant (Medicine), 2nd Prize;
Physical Society's Essay, Prize;
General Proficiency, Treasurer's Medal.

Giles (F. W.), Henley-on-Thames.
w 1875–6. 3rd Year Student, Hon. Cert.

Gimblett (J.), Taunton.
1860. 1st Year Student, Hon. Cert.

Gimlette (G. H. D.), Southsea.
s 1874. 1st Year Student, Hon. Cert.
w 1875–6. 3rd Year Student, Hon. Cert.
w 1876–7. Physical Society's 3rd Year's Prize.

Glover (J. P.), Lansdowne Road.
w 1881–2. 3rd Year Student, 3rd Coll. Prize.

* Consulting Obstetric Physician to St. Thomas's Hospital, and to the Royal Maternity Charity. Examiner in Obstetric Medicine at the University of Cambridge and the Royal College of Physicians. Late Obstetric Physician to, and Lecturer on Midwifery and Diseases of Women and Children at, St. Thomas's Hospital.

Goddard (E.), London.
1860. Matriculation Examination, Classics, &c., Prize.

Goddard (L.), London.
1856 Matriculation Examination, Classics and Mathematics, Prize.

Godfrey (A. E.), Northampton.
s 1883. 2nd Year Student, 2nd Coll. Prize.
w 1883–4. 3rd Year Student, 2nd Coll. Prize.

Gooddy (E. S.), Hampstead.
w 1882–3. 2nd Year Student, 3rd Coll. Prize.
s 1883. 2nd Year Student, 1st Coll. Prize.

Gowland (W.), London.
1845. Botany, Hon. Cert.

Grabham (C.), Islington.
1857. Matriculation Examination, Modern Languages, Prize.

Grabham (G. W.),† Islington.
1855. Matriculation Examination, Scholarship;
Midwifery, Hon. Cert.;
Materia Medica, Hon. Cert.

Grabham (J.), Rochford, Essex.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.;
Botany, Hon. Cert.;
Comparative Anatomy, Prize.
1850. Physiology, Hon. Cert.
1851. Physiology, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Forensic Medicine, Prize;
Surgery, Prize;
Midwifery, Hon. Cert.

Grabham (M. C.), Islington.
1860. 2nd Year Student, Hon. Cert.
1861. 3rd Year Student, Hon. Cert.

Greaves (C. A.), Derby.
1861. 1st Year Student, Treasurer's Prize;
Matriculation Examination, Hon. Cert.
1862. 2nd Year Student, 2nd College Prize;
Physical Society's Prize.
1863. 3rd Year Student, 1st College Prize;
Physical Society's Prize;
Cheselden Medal.

Green (C. D.), New Cross.
w 1879–80. 1st Year Student, The Wm. Tite Scholarship.
s 1880. 3rd College Prize.
w 1880-81. 1st College Prize.
s 1882. 1st Coll. Prize.
w 1882–3. 4th Year Student, qualified for Treasurer's Gold Medal.

Green (J. T.), Peckham, Surrey.
1865. 1st Year Student, Physical Society's Prize.

Green (M. H.), Peckham.
s 1873. 1st Year Student, 2nd College Prize.

Grose (S.), Boston, Lincoln.
1858. 2nd Year Student, Hon. Cert.
1859. Physical Society's Essay Prize.

† Government Inspector of Lunatic Asylums and Hospitals, New Zealand. Late Resident Medical Superintendent at Earlswood Asylum.

GRIFFITHS (A. L.), London.
1859. Midwifery, Hon. Cert.

GULLIVER (G.),* Canterbury.
w 1876-7. Physical Society's 2nd Year's Prize.

GURNEY (R. A. F.), Rampton, Cambridge.
1851. Practical Midwifery, Prize.

HAGUE (S.),† Camberwell.
1863. 1st Year Student, 2nd Coll. Prize.

HAIG-BROWN (C. W.), Godalming.
s 1878. 1st Year Student, 2nd College Prize;
w 1878-9. 2nd Year Student, 2nd College
w 1880-81. The Cheselden Medal. [Prize.

HAINWORTH (E. M.), Blackheath.
w 1888-9. 1st Year Student, 1st Entrance Science Scholarship.

HAMMERTON (E.), Elland, York.
1857. 1st Year Student, Hon. Cert.

HAMMOND (J. H.), Bridlington, York.
1850. Medical Cases, President's Prize.

HARDING (J. A.), Bath.
1859. Clinical Medicine, 2nd Prize.
1860. Clinical Assistant (Medicine), 1st Prize.

HARPER (R.), Brighton.
1844. Clinical Surgical Reports, Hon. Cert.
1845. Physical Society's Essay, Prize;
Dresser's Clinical Surgery, Prize.

HARRIS (J. E.), Lavender Hill.
w 1887–8. 1st Year Student, 1st Entrance Science Scholarship.

HASLAM (W. F.),‡ Reading.
s 1876. 2nd Year Student, 1st College Prize.
w 1877-8. The Cheselden Medal.

HATCHETT (F. W.), S. Wales.
s 1880. 1st Year Student, 1st College Prize.

HATTON (G. S.), Newent, Glo'stershire. [Prize.
w 1876-7. 2nd Year Student, Prosector's

HAWKINS (H. P.).§ Hawkhurst.
w 1882–3. 1st Year Student, The William Tite Scholarship.
w 1883–4. 2nd Year Student. The Peacock Scholarship.
w 1884–5. 3rd Year Student, 2nd tenure of Peacock Scholarship and 1st Coll. Prize.
w 1885–6. 4th Year Student, qualified for Mead Medal.

HEELIS (R.), Carshalton.
s 1877. 1st Year Student, 2nd College Prize.
s 1878. 2nd Year Student, 2nd Coll. Prize.

HEFFERNAN (H. H.), Southsea.
w 1883–4. 1st Year Student, 2nd Coll. Prize.
w 1886–7. 4th Year Student, qualified for Cheselden Medal.

HEIGHTON (T.), Leicester.
w 1873. 3rd Year Student, Hon. Cert.

HEWLETT (T. J.), Harrow.
1850. Matriculation Scholarship, Prize.

HEYGATE (W. N.), Harslope, Bucks.
1863. 2nd Year Student, Hon. Cert.
1864. 3rd Year Student, Hon. Cert.

HEYWOOD (C. C.), Swinton, Manchester.
s 1888. 3rd Year Student, 2nd Coll. Prize.

HICKS (J. W.), ‖ Highgate New Town, N.
1859. 1st Year Student, Trea.'s 1st Prize.
1860. 2nd Year Student, 1st College Prize; Physical Society's Prize.
1861. 3rd Year Student, 1st College Prize; Physical Society's Prize; Cheselden Medal; Treasurer's Gold Medal.

HIGGINS (A. H.), Bermondsey.
1857. Midwifery, Hon. Cert.

HILDITCH (J.), Sandbach, Cheshire.
1857. 1st Year Student, Hon. Cert.
1858. Physical Society's Essay, Prize.
1859. Essay on Neuralgia, Mr. N. Smith's Prize.

HOBHOUSE (E.), Batcombe.
w 1885–6. 3rd Year Student, 2nd Coll. Prize.
w 1886–7. 4th Year Student, qualified for for the Mead Medal.

HODGES (H. B.).
1855. Midwifery, Hon. Cert.

HODGES (R.), London.
1843. Physiology and Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Clinical Medicine, Hon. Cert.;
Surgical Essay, Silver Medal.

HO KAI, Hong Kong, China.
w 1875–6. 1st Year Student, Hon. Cert.
s 1876. Hon. Cert.
w 1876–7. 2nd Year Student, Hon. Cert.

HOLBERTON (H. N.), Hampton.
w 1876–7. 2nd Entrance Science Scholarship, and 2nd College Prize.
w 1877–8. 2nd Year Student, 1st Coll. Prize.

HOOPER (J. H.), Upton Warren.
1858. 1st Year Student, Hon. Cert.
1859. 2nd Year Student, College Prize.
1860. 3rd Year Student, Hon. Cert.

HOPTON (A. W.), Stockwell.
1851. Descriptive Anatomy, Hon. Cert.

HOUSE (F. M.), Chilbolton, Hants.
w 1886–7. 4th Year Student, qualified for the Mead Medal.

HOWELL (T.), London.
1850. Practical Midwifery, Prize.

---

* Physician to London Fever Hospital. Assistant Physician to, and Lecturer on Comparative Anatomy at, St. Thomas's Hospital.

† Late Medical Registrar at St. Thomas's Hospital.

‡ Assistant Surgeon to the Birmingham General Hospital; late Demonstrator of Anatomy at St. Thomas's Hospital.

§ Resident Assistant Physician to St. Thomas's Hospital; Radcliffe Travelling Fellow, Oxford, 1886.

‖ Late Lecturer on Botany at St. Thomas's Hospital; late Curator of the Museum.

HUBBARD (J. W.), Leicester.
1847. Clinical Medical Reports, Prize;
Medicine, Prize;
Physiology and Anatomy, Hon. Cert.
Physical Society's Essay, Treasurer's Prize.

HULBERT (H. H.), Highworth.
w 1887–8. 4th Year Student, qualified for Cheselden Medal.

HULL (W. W.), Acton.
w 1878-9. 2nd Entrance Science Scholarship.
w 1881–2. The Mead Medal.

HUNT (J. A.), Derby.
w 1873. 1st Year Student, Hon. Cert.
w 1874. Prosector's Prize.

HUNTER (W. F.), Margate.
1859. 1st Year Student, Hon. Cert.;
Matriculation Examination in Classics and Mathematics, Prize;
Matriculation Examination in Modern Languages, Prize.
1860. 2nd Year Student, 3rd Coll. Prize.
1861. 3rd Year Student, Hon. Cert.

HURMAN (H. B.), Bridgewater.
1853. Midwifery, Hon. Cert.

HUTTON (J. S.), Sevenoaks.
w 1881–2. Entrance Science Scholarship. 2nd Coll. Prize.
■ 1882. 1st Coll. Prize.
s 1884. 3rd Year Student, ½ 1st and 2nd Coll. Prizes.
w 1884–5. 4th Year Student, qualified for the Mead and Treasurer's Medals.

ILES (D.), Fairford.
1863. 2nd Year Student, Hon. Cert.
1864. 3rd Year Student, Hon. Cert.

INGLIS (W. W.),* Brixton Hill.
1864. 1st Year Student, 2nd Coll. Prize.
1865. 2nd Year Student, 2nd Coll. Prize.
1866. 3rd Year Student, 3rd Coll. Prize Cheselden Medal.

IVES (R.).
1855. Midwifery, Hon. Cert.

JACKSON (T. C.), Rotherhithe.
1844. Materia Medica, Hon. Cert.

JACOB (E. H.), Winchester.
w1875-6. Physical Society's 3rd Year's Prize.

JACOBSON (T. E.), Sleaford, Lincoln.
1852. Practical Midwifery, Prize.

JAFFÉ (C. S.), Hyde Park.
w 1887–8. 1st Year Student, ½ 2nd Coll. Prize.

JAMES (C. H.), Oudh, India.
w 1887–8. Solly Medal and Prize.

JARDINE (J. L.), Brixton.
1848. Physiology and Anatomy, Hon. Cert.
1850. Medical Reports, Dr. Roots' Prize.

JAY (M.), Wallaroo, South Australia.
w 1877-8. 1st Year Student, 3rd Coll. Prize.
w 1878-9. 2nd Year Student, 2nd College Prize;
Prosector's Prize.

* Late Medical Registrar at St. Thomas's Hospital.

JEFFERSON (T. J.), Hull.
1861. 2nd Year Student, Hon. Cert.
1862. 3rd Year Student, Hon. Cert.

JOHNSON (W. G.), Wandsworth.
1853. Chemistry, Hon. Cert.
1854. Midwifery, Hon. Cert.
1855. Comparative Anatomy, Prize;
Midwifery, Hon. Cert.

JOHNSTON (G. D.).
w 1882–3. 4th Year, Cheselden Medal.

JONES (S.),†Cricklewood, Middlesex.
1851. Matriculation Scholarship, Prize;
Descriptive Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.;
1st Year Student, Scholarship.
1852. 2nd Year Student, Scholarship;
Physiology, Hon. Cert.;
Descriptive Anatomy, Prize;
Botany, Hon. Cert.
1853. Physiology, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
3rd Year Student, Scholarship;
Materia Medica, Hon. Cert.

JONES (Sydney H.), George Street, Hanover Square.
w 1881–2. 1st Year Student, Entrance Science Scholarship. The Wm. Tite Scholarship.
w 1882–3. 2nd Year Student, ½ Musgrove Scholarship and 1st Coll. Prize combined.
Prosector's Prize.
w 1883–4. 3rd Year Student, 2nd tenure of ½ Musgrove Scholarship, with 1st College Prize.
s 1884. 3rd Year Student, ½ 1st and 2nd Coll. Prizes.
w 1884–5. 4th Year Student, The Cheselden Medal.
Treasurer's Gold Medal.

JONES (A. O.), Islington.
1862. 1st Year Student, Hon. Cert.

JONES (A. W.), Godington, Oxon.
■ 1888. 3rd Year Student, 1st Coll. Prize.
w 1888-9. 4th Year Student, qualified for Mead Medal.

JONES (J.), Ilfracombe.
1863. Matriculation Examination — Modern Languages and Modern History, College Prize.

JONES (W. Wansbrough),‡ Leek.
w 1877-8. 1st Year Student;
1st Entrance Science Scholarship; £60.
The William Tite Scholarship.
w 1877–8. 1st Year Physical Society's Prize;
s 1878. 1st Year Student, 1st Coll. Prize;
w 1878-9. 2nd Year Student, The College Scholarship;
s 1879. 2nd Year Student, 2nd Coll. Prize;
w 1879–80. 3rd Year Student, 2nd tenure of Coll. Scholarship, and 1st Coll. Prize.
w 1880–81. The Mead Medal;
Treasurer's Gold Medal.

† Member of Council, Royal College of Surgeons; Surgeon to, and Joint Lecturer on Surgery at, St. Thomas's Hospital; late Lecturer on Anatomy and Ophthalmic Surgery.

‡ Radcliffe Travelling Fellow, Oxford, 1880. Late Resident Medical Officer, Barnes Convalescent Hospital, Manchester.

JOSEPH (S. W. J.), St. Leonards.
1873. Physical Society's 2nd Year Prize.

KEELE (J. T.), South Lambeth.
1853. Materia Medica, Hon. Cert.;
Midwifery, Hon. Cert.

KERAKOOSE (J.), East Indies.
1854. Midwifery, Hon. Cert.

KEYWORTH (J. W.),* Aston, Berks.
1848. Chemistry, Hon. Cert.;
Materia Medica, Prize;
General Proficiency, Hon. Cert.
1849. Physiology, Hon. Cert.;
Midwifery, 3rd Prize;
Medicine, Hon. Cert.;
Physical Society's Essay, Prize.
1850. Physiology, Hon. Cert.;
(Accoucheur)Midwifery,Hon. Cert.;
Ophthalmic Reports, a Governor's Prize;
Essay on Neuralgia, Mr. Newman Smith's Prize.
1851. Comparative Anatomy, Prize;
Clinical Medicine, Prize;
Surgical Reports, Prize;
Midwifery, Prize;
Medical Reports, Prize;
Pathology, Prize;
Physical Society's Essay, Prize.

KIDD (H. C.), Upper Norwood.
w 1881–2. 1st Year Student, 3rd Coll. Prize.
w 1884–5. 4th Year Student, qualified for the Mead Medal.

KING (A.), Norwich.
w 1886–7. 1st Year Student, 1st Coll. Prize.
s 1887. 1st Year Student, 1st Coll. Prize.
s 1888. 2nd Year Student, 1st Coll. Prize.
w 1888–9. 3rd Year Student, 3rd Coll. Prize.

KNAGGS (R. H. E.), Trinidad, W. Indies.
w 1875-6. Prosector's Prize.

LAKE (W. W.), Ilford, Essex.
1873. Physical Society's 1st Year's Prize.

LAKE (R.), Dover.
w 1881–2. 2nd Year Student, Prosector's Prize.
w 1883–4. 4th Year Student, qualified for Cheselden Medal.

LAMBERT (T. W.), Cottingham.
w 1888–9. 4th Year Student, qualified for Cheselden Medal.

LANGLEY (R. J.), Tilehurst, Reading.
w 1886–7. 4th Year Student, qualified for Cheselden Medal.

LANKESTER (A. C.), Leicester.
w 1885–6. 1st Year Student, 1st Coll. Prize.
w 1886–7. 2nd Year Student, ½, 1st and 2nd College Prizes.
w 1888–9. 4th Year Student, The Cheselden Medal.

LANKESTER (H.), Poole, Dorset.
1850. 1st Year Student, Scholarship;
Descriptive Anatomy, 1st Prize;
Chemistry, Prize.
1851. Physiology, Prize;
Materia Medica, Prize;
Descriptive Anatomy, Hon. Cert.;
Botany, Hon. Cert.;
Medicine, Prize;
Physical Society's Essay, Prize;
Surgery, Hon. Cert.
1852. 3rd Year Student, Scholarship;
Physiology, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Medical Cases, President's Prize;
Medicine, Prize;
Surgery, Prize;
Surgery and Surgical Anatomy Cheselden Medal;
General Proficiency, Treasurer's Medal.
1853. Surgical Essay, President's Prize.

LANKESTER (H. H.), Leicester.
w. 1880–81. Entrance Science Scholarship.
1st Year Student 2nd Coll. Prize.
w 1881–2. 2nd Year Student, The College Scholarship Two Years.

LAVER (H.)
1855. Midwifery, Hon. Cert.

LAVER (A. H.), Rayleigh.
1870. 1st Year Student, 3rd Coll. Prize.
1871. 2nd Year Student, 2nd Coll. Prize.
w 1872. 3rd Year Student, 2nd Coll. Prize, Cheselden Medal.

LAWSON (R.), St. Andrews, N.B.
w 1880–81. 1st Entrance Science Scholarship.
1st Year Student, The Wm. Tite Scholarship.
s 1881. 2nd Coll. Prize.
w 1881–2. 2nd Year, 2nd Coll. Prize.
w 1882–3. 3rd Year, 2nd Coll. Prize.
w 1883–4. 4th Year Student, The Cheselden Medal;
Treasurer's Gold Medal.

LAXTON (T. L.), Stamford.
w1876-7. 2nd Year Student, Prosector's Prize.

LEDGER (M.), London.
1845. Dresser's Clinical Surgery, Prize.

LEES (J.),† Wolverhampton.
1859. 1st Year Student, Hon. Cert.;
1861. 3rd Year Student, Hon. Cert.;
Physical Society's Prize.

LEESON (T.), Snaith, York.
1847. Medicine, Hon. Cert.;
Surgery, Prize;
Physiology and Anatomy, Hon. Cert.;
Descriptive and Surgical Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Physiology and Anatomy, Hon. Cert.;
Medicine, Hon. Cert.;
Midwifery, Prize.

LE GROS (J.), Jersey.
1844. Medicine, Hon. Cert.;
Midwifery, 1st Prize.
1845. Clinical Medical Reports, Medal;
Medicine, Hon. Cert.;
Dresser's Clinical Surgery, Prize.

LEREW (F. W.), Maida Vale.
s 1876. 1st Year Student, Hon. Cert.

* Late Lecturer on Physiology at Sydenham College, Birmingham.

† Late Demonstrator of Morbid Anatomy at St. Thomas's Hospital.

LITTELJOHN (S. G.), Falmouth, Jamaica.
1865 1st Year Student, Hon. Cert.

LOCOCK (H. S.), Blackheath.
1848. Descriptive and Surgical Anatomy, Hon. Cert.;
Physiology and Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.
1849. Physiology, Hon. Cert.

LONGSTAFF (G. B.), Wandsworth.
w 1873-4. 1st Year Student, 2nd Coll. Prize.
s 1874. 1st Coll. Prize;
Physical Society's 1st Year's Prize;
1875. 2nd Year Student, 2nd Coll. Prize.
w 1875-6. 3rd Year Student, 1st Coll. Prize.
w 1876-7. 4th Year Student, Mead Medal.

LOVELL (C. P.), Hyde Park.
w 1886–7. 1st Year Student, 1st Entrance Science Scholarship.
w 1887–8. 2nd Year Student, The Peacock Scholarship.
w 1888–9. 3rd Year Student, Second Tenure of Peacock Scholarship.

LUARD (H. B.), Aveley, Essex.
s 1886. 3rd Year Student, 2nd Coll. Prize.
w 1886–7. 4th Year Student, qualified for the Mead Medal.

LUSH (W. H.), Devizes.
w 1872. 2nd Year Student, Prosector's Prize.

LUSH (J. S.), West Lavington.
s 1873. 1st Year Student, 3rd Coll. Prize.

MACEVOY (H. J.), Chantilly.
w 1884–5. 3rd Year Student, ½ 2nd and 3rd College Prizes.
s 1885. 3rd Year Student, ½ 1st and 2nd Coll. Prizes.
w 1885–6. 4th Year Student, Bronze Mead Medal.

MACKENZIE (H. W. G.),* Edinburgh.
w 1882–3. 3rd Year Student, 3rd Coll. Prize.
s 1883. 3rd Year Student, 1st Coll. Prize.
w 1883–4. 4th Year Student, The Mead Medal.

MACMURDO (H. H.), New Broad Street.
1847. Chemistry, Hon. Cert.
1849. Midwifery, Hon. Cert.

MANBY (W. G.), Barking, Essex.
1851. Descriptive Anatomy, Hon. Cert.

MARCH (H. C.), Newbury.
1858. 1st Year Student, Treasurer's 2nd Prize.
1859. 2nd Year Student, Hon. Cert.
1860. 3rd Year Student, Hon. Cert.

MARTIN (C. J.), Dalston.
w 1884–5. 1st Year Student, 2nd Entrance Scholarship.

MASON (M. T.), Newington.
1845. Practical Midwifery, Hon. Cert.

* Assistant Physician to the Royal Free Hospital and to the Hospital for Consumption, Brompton; Medical Registrar at, late Resident Assistant Physician to, St. Thomas's Hospital.

MAYBURY (A. C.), Frimley, Surrey.
1865. 3rd Year Student, Hon. Cert.

MAYBURY (W. A.), Frimley, Surrey.
1867. 1st Year Student, 3rd College Prize.

MAYBURY (H. M.), Frimley, Surrey.
1869. 1st Year Student, 2nd Coll. Prize.
1871. 3rd Year Student, 3rd Coll. Prize.

MAYBURY (A. V.), Frimley.
1870. 1st Year Student, 2nd Coll. Prize.
1871. 2nd Year Student, 1st Coll. Prize.
w 1872. 3rd Year Student, 1st Coll. Prize; Treasurer's Gold Medal.

MAYNARD (J. C. M.)
1855. Midwifery, Hon. Cert.

MEADOWS (H.), Leicester.
1867. 1st Year Student, The William Tite Scholarship;
Phys. Soc. 1st Year's Prize.
1868. 2nd Year, Tite Scholarship;
Phys. Soc. 2nd Year's Prize.

MILLAR (W. H.), Brixton Hill.
w 1888–9. 3rd Year Student, 2nd Coll. Prize.

MILLER (B.), London.
1845. Midwifery, Hon. Cert.;
Practical Midwifery, Prize;
Clinical Medicine, Prize.

MILNE (C. W.), Aberdeen.
1865. 1st Year Student, Hon. Cert.

MITCHELL (J.), Leicester.
1866. 1st Year Student, 2nd Coll. Prize;
Phys. Society's 1st Year's Prize.
1867. 2nd Year Student, 2nd Coll. Prize.
1868. 3rd Year Student, 2nd Coll. Prize.

MONEY (F. J.), Offham, Kent.
1849. Descriptive Anatomy, 2nd Prize;
Chemistry, Prize;
Materia Medica, 1st Prize;
Matriculation Scholarship, Prize;
1st Year Student Scholarship.
1850. Physiology, Prize;
Comparative Anatomy, Prize;
Descriptive Anatomy, Prize;
Medicine, Prize;
Surgery, Hon. Cert.
1851. Descriptive Anatomy, Hon. Cert.;
Midwifery, Prize;
Medicine, Prize;
Physical Society's Essay, Prize;
Surgery, Prize;
Surgery and Surgical Anatomy, Cheselden Medal;
General Proficiency, Treasurer's Gold Medal.

MONTAGUE (A. J. H.), Wandsworth Road.
w 1884–5. 4th Year Student, qualified for the Mead Medal.

MORETON (J. E.), Marton, Cheshire.
1850. 1st Year Student, Scholarship;
Descriptive Anatomy, Hon. Cert.;
Chemistry, Hon. Cert.
1851. Materia Medica, Hon. Cert.;
Botany, Hon. Cert.;
1852. Physiology, Prize;
Descriptive Anatomy, Prize;
Physical Society's Essay, Prize;
Medicine, Prize;
Surgery, Prize;
2nd Year Student, Scholarship.

1853. 3rd Year Student, Scholarship;
Physiology, Prize;
Clinical Medicine, Pres. Prize;
Clinical Medicine, Treas. Prize;
Clinical Medicine, Mr. N. Smith's Prize;
Descriptive Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.;
Ophthalmic Surgery, Prize;
Medicine, Prize;
Forensic Medicine, Hon. Cert.;
Surgery, Hon. Cert.;
Surgery and Surgical Anatomy, Cheselden Medal;
Gen. Proficiency, Treas. Medal.
1854. Clinical Med., Dr. Roots' Prize;
Pathology, Hon. Cert.

Moreton (T.), Marton, Cheshire.
1857. 1st Year Student, Treasurer's 2nd Prize;
Matriculation Examination, Classics and Mathematics, Prize.
1858. Clinical Medicine, Prize.
1859. 3rd Year Student, Hon. Cert.;
Clinical Medicine, Hon. Cert.

Morgan (S.), London.
1852. Descriptive Anatomy, Hon. Cert.
1853. Midwifery, Hon. Cert.
1854. Midwifery, Hon. Cert.;
Forensic Medicine, 2nd Prize.

Morris (C. K.), Spalding, Lincolnshire.
w 1875. Prosector's Prize.

Morton (J.), Holbeach, Lincoln.
1861. 1st Year Student, Hon. Cert.
1862. 2nd Year Student, Hon. Cert.
1863. 3rd Year Student, Hon. Cert.

Moxon (H. M.), Brigsham.
1871. Prosector's Prize.

Musson (A. W.), Clitheroe.
w 1888–9. 4th Year Student, qualified for Mead Medal.

Musson (W. E.), Birkholme, Lincoln.
1850. Matriculation Scholarship, Prize;
Descriptive Anatomy, Hon. Cert.
1851. Physiology, Hon. Cert.;
Comparative Anatomy, Hon. Cert.;
Medicine, Hon. Cert.

Newby (C. H.),* London.
1870. Prosector's Prize.

Newsholme (A.), Bradford.
w 1875-6. 1st Year Student, 1st Coll. Prize.
w 1876-7. 2nd Year Student, 1st College Scholarship.
s 1877. Ditto 1st Coll. Prize.
w 1877-8. 3rd Year Student, The "College Scholarship," 1st Coll. Prize.

Newth (A. H.), Kennington, Surrey.
1865. 1st Year Student, Hon. Cert.

Nichol (F. E.), Roupell Park.
w 1853-5. 4th Year Student, qualified for the Cheselden Medal.

* Late Surgical Registrar at St. Thomas's Hospital.

Nichol (R.), Camberwell.
1844. Chemistry, 1st Prize;
Materia Medica, Prize. [Cert.;
1845. Physiology and Anatomy, Hon.
Botany, Prize;
Comparative Anatomy, Prize.

Nicholson (F. W.), Putney.
s 1877. 1st Year Student, 3rd Coll. Prize.
w 1877-8. 2nd Year Student, Prosector's Prize.

Nicholson (J. F.),† Brigg, Lincoln.
w 1873. 1st Year Student, 1st Coll. Prize.
s 1873. 1st Year Student, 1st Coll. Prize.
w 1874. 2nd Year Student, 1st Coll. Prize.
s 1874. Ditto 1st Coll. Prize.
w 1875. 3rd Year Student, 1st Coll. Prize;
Cheselden Medal;
Mead Medal;
Treasurer's Gold Medal.

Nix (H. W.), Somersham.
w 1888–9. 4th Year Student, qualified for Cheselden Medal.

O'Callaghan (C.), Killarney.
1847. Chemistry, Hon. Cert.;
Materia Medica, Prize.
1848. Medical Reports, President's Prize;
Physiology and Anat., Hon. Cert.;
Midwifery, Hon. Cert.;
Practical Midwifery, Prize;
Forensic Medicine, Prize;
Physical Society's Essay, Prize.
1849. Physical Society's Essay, Treasurer's Prize;
Resident Accoucheur's Report, Prize.

Orange (W.),‡ Torquay.
1854. Midwifery, Hon. Cert.
1856. Midwifery, Hon. Cert.

Ord (G. R.), Brixton.
1858. Midwifery, Hon. Cert.

Ord (W. M.),§ Brixton.
1853. Matriculation Examination Scholarship;
1st Year Student, Scholarship;
Descriptive Anatomy, Prize;
Chemistry, Prize.
1854. 2nd Year Student, Scholarship;
Medicine, Prize;
Materia Medica, Prize;
Descriptive Anatomy, Hon. Cert.;
Midwifery, Hon. Cert.;
Surgery, Hon. Cert.;
Physiology, Prize.
1855. 3rd Year Student, Scholarship;
Surgery and Surgical Anatomy, Cheselden Medal;
Forensic Medicine, Prize;
Pathology, Prize;
Practical Chemistry, Prize;
Medicine, Hon. Cert.;
Descriptive Anatomy, Hon. Cert.;
Physiology, Prize;
General Proficiency, Treasurer's Medal.
1856. Registrar, Prize.

† Physician to the Hull General Infirmary.

‡ Late Resident Medical Superintendent at Broadmoor Asylum.

§ Physician to, and Joint Lecturer on Medicine at, St. Thomas's Hospital. Late Lecturer on Comparative Anatomy, Physiology, and Practical Physiology.

Ord (W. W.), Brook Street.
s 1884. 1st Year Student, 2nd Coll. Prize.
w 1884–5. 2nd Year Student, ½ 2nd College Prize.
w 1886-7. 4th Year Student, Mead Medal.

Osborn (S.),* Brixton.
1870. Physical Society's 2nd Year's Prize.

Oughton (T.), London.
1858. Clinical Medical Assistant, 1st Prize.

Ozanne (C. H.), Guernsey.
1844. Descriptive and Surgical Anatomy, Prize.

Ozanne (J.), Guernsey.
1843. Physiology and Anatomy, Cheselden Medal;
Comparative Anatomy, Hon. Cert.
1844. Medicine, Prize;
Midwifery, 2nd Prize;
Surgery, Hon. Cert.;
Physical Society's Essay, Prize;
Clinical Surgical Reports, Silver Medal.

Page (W. H.), Cheltenham.
s 1872. 1st Year Student, Hon. Cert.
w 1873. 3rd Coll. Prize.

Palmer (M. H. C.), Newbury, Berks.
1870. Physical Society's 2nd Year's Prize.
1872. Physical Society's 3rd Year's Prize.

Parsons (F. G.), Lee, Kent.
w 1882–3. 2nd Year, Prosector's Prize.
w 1886–7. 6th Year, Grainger Testimonial Prize.

Pearce (G.), Salisbury.
1860. 1st Year Student, 2nd Coll. Prize.
1861. 2nd Year Student, 2nd Coll. Prize.

Peek (F. H.), Diss, Norfolk.
s 1872. 1st Year Student, 1st Coll. Prize.
w 1873. The William Tite Scholarship.
w 1874. 2nd Year Wm. Tite Scholarship.

Penberthy (J.), Redruth.
1854. 1st Year Student, Scholarship;
Descriptive Anatomy, Prize;
Chemistry, Hon. Cert.
1855. 2nd Year Student, Scholarship;
Midwifery, Hon. Cert.;
Botany, Prize;
Descriptive Anatomy, Hon. Cert.

Perkins (J. J.), Brixton.
w 1888–9. 3rd Year Student 1st Coll. Prize.

Pern (A.), Winchester, Hampshire.
1865. 1st Year Student, Hon. Cert.

Phillips (G. G.), Newcastle Emlyn.
1859. 2nd Year Student, Hon. Cert.
1860. 3rd Year Student, 3rd Coll. Prize.

Pickford (J. K.), Brixton.
w 1872. 1st Year Student, 3rd Coll. Prize.
s 1872. Hon. Cert.

Pietersen (J.), Cape of Good Hope.
w 1883–4. Solly Medal and Prize.

Pike (W. R.), Leicester.
1868. Physical Society's 1st Year's Prize.

* Assistant Surgeon to the Hospital for Women, Soho Square. Late Surgical Registrar at St. Thomas's Hospital.

Pike (J. B.), Leicester.
w 1872. 2nd Year Student, Hon. Cert.
w 1873. 3rd Year Student, Hon. Cert.

Planck (C.), Regent's Park.
w 1888–9. 1st Year Student, 2nd Coll. Prize.

Plowman (R.), Bridgewater, Somst.
1862. 1st Year Student, Hon. Cert.
1863. 2nd Year Student, Hon. Cert.
1865. 3rd Year Student, Hon. Cert.

Pollard (F.), Taunton, Somerset.
1865. 1st Year Student, 2nd Coll. Prize.
1866. 2nd Year Student, 2nd Coll. Prize;
Physical Society's 2nd Year's Prize.
1868. 3rd Year Student, 1st Coll. Prize;
Physical Society's 3rd Year's Prize;
Cheselden Medal.

Potter (H. P.),† Denmark Hill.
w 1872. 1st Year Student, Hon. Cert.
s 1872. 3rd College Prize.
w 1873. 2nd Year Student, 2nd Coll. Prize;
Prosector's Prize.
w 1874. 3rd Year Student, 1st Coll. Prize;
Cheselden Medal;
Hon. Cert. for Gen. Proficiency.
1875. Grainger Testimonial Prize.

Poynder (G. F.), Clapham.
1872. Phys. Society's 1st Year's Prize.
1874. Phys. Society's 3rd Year's Prize.

Purkiss (A.), Kennington.
w 1875-6. 1st Year Student, Hon. Cert.
s 1876. Hon. Cert.

Purvis (J. P.), Blackheath.
1861. 1st Year's Student, Hon. Cert.;
Matriculation Examination, Hon. Cert.
1862. 2nd Year Student, Hon. Cert.
1863. 3rd Year Student, Hon. Cert.

Rainbow (F.), Lower Norwood.
1864. 1st Year Student, Hon. Cert.
1865. 2nd Year Student, 3rd Coll. Prize.
1866. 3rd Year Student, 2nd Coll. Prize.

Rayner (H.),‡ Hythe, Kent.
1862. Matriculation Examination—Physics and Natural History, Hon. Cert.;
1st Year Student, 1st Coll. Prize.
1863. 2nd Year Student, 1st Coll. Prize.
1864. 3rd Year Student, Hon. Cert.;
Hon. Cert. for the Cheselden Medal.

Relton (B.), Ealing.
1880. 2nd Entrance Science Scholarship.

Richardson (C. S.), Greenwich.
1851. Surgery, Hon. Cert.
1852. Midwifery, Prize.

Richardson (L.), Greenwich.
1848. General Pathology, Prize.

Ridge (J. J.), Horselydown.
1864. 1st Year Student, The William Tite Scholarship.
1865. 2nd Year of Tite's Scholarship;
Physical Society's 2nd Year's Prize
Prosector's Prize.

† Late Surgical Registrar to St. Thomas's Hospital.

‡ Lecturer on Psychology at St. Thomas's Hospital. Late Lecturer on Psychology at Middlesex Hospital, and Medical Superintendent Hanwell Asylum,

1866. The Grainger Testimonial Prize.
1868. 3rd Year Tite Scholarship;
Hon. Cert. for Proficiency in Surgery and Surgical Anatomy;
Treasurer's Gold Medal.

Roberts (E. A.), Birmingham.
w 1884–5. 1st Year Student, ½ 1st and 2nd College Prizes.
s 1887. 3rd Year Student, 2nd Coll. Prize.

Robinson (H. B.),* Lower Norwood.
s 1881. 2nd Year Student, 1st Coll. Prize.

Roe (A. D.), Eccles.
w. 1880–81. 3rd Year Student, 2nd Coll. Prize.

Rogers (R. S.), Greenwich.
1843. Midwifery, First Prize;
Clinical Medicine, Hon. Cert.

Rossiter (G. F.), Taunton.
1871. 1st Year Student, 1st Coll. Prize.
w 1872. 2nd Year Student, 2nd Coll. Prize.
s 1872. 1st Coll. Prize.
w 1873. 3rd Year Student, 3rd Coll. Prize;
Cheselden Medal;
Treasurer's Gold Medal.

Rouse (R. E.), Woodbridge.
s 1880. 2nd Year Student, 3rd College Prize.

Rudall (J. T.), Crediton, Devon.
1853. Physiology, Hon. Cert.;
Midwifery, Hon. Cert.;
Medicine, Hon. Cert.;
Surgery, Hon. Cert.

Sandford (H. C.), Brixton.
w 1872. 1st Year Student, 1st Coll. Prize.
s 1872. 2nd College Prize.
w 1873. 2nd Year Student, 1st Coll. Prize.
s 1873. 3rd College Prize.
w 1874. 3rd Year Student, 2nd Coll. Prize;
Treasurer's Gold Medal.

Saneyoshi (Y.), Tokio, Japan.
w 1881–2. 3rd Year Student, 1st. Coll. Prize.

Sankey (G. G.), Ashford, Kent.
1864. 3rd Year Student, 3rd Coll. Prize.

Saunders (G. M. C.), London.
1843. Midwifery, Hon. Cert.

Saunders (H. W.), London.
1867. 1st Year Student, 2nd Coll. Prize.
1868. Prosector's Prize.
1869. 3rd Year Student, 1st. Coll. Prize;
Treasurer's Gold Medal;
Physical Society's 3rd Year's Prize.

Saunders (W. S.), Camden Town.
1844. Midwifery, Hon. Cert.
1845. Medicine, Prize;
Midwifery, Prize;
Clinical Medicine, Prize.

Savill (T. D.), Brixton.
w 1875-6. 2nd Entrance Science Scholarship;
1st Year Student, The William Tite Scholarship.
s 1876. 3rd College Prize.
w 1876-7. 2nd Year Student, Hon. Cert.
s 1877. 2nd Year Student, 2nd Coll. Prize.

Scott (R. J.), Omagh, Tyrone.
1861. 1st Year Student, Hon. Cert.

* Resident Assistant Surgeon to St. Thomas's Hospital.

Scutt (T.), Bere Regis.
w 1882–3. 3rd Year Student, 1st Coll. Prize.

Sedgwick (J.), Boroughbridge.
1854. Descriptive Anatomy, Hon. Cert.
1855. Surgery, Hon. Cert.;
Midwifery, Hon. Cert.

Sedgwick (L. W.), Boroughbridge.
1848. Descriptive and Surgical Anatomy, Prize;
Physiology and Anatomy, Prize;
Medicine, Hon. Cert.;
Midwifery, Prize;
Surgery, Prize;
1849. Physiology, 1st Prize;
Midwifery, 1st Prize;
Surgery, Prize;
Medicine, 1st Prize;
General Proficiency, Treasurer's Medal.

Sergeant (E.), Preston.
1870. 3rd Year Student, 3rd Coll. Prize;
Cheselden Medal.

Sewell (E.), Little Oakley.
1848. Physiology and Anatomy, Hon.Cert.

Sharkey (S. J.),† Galway.
1874. Physical Society's 2nd Year's Prize.

Shaw (J.), Clapham Road.
w 1874-5. 1st Year Student, 1st Coll. Prize.
s 1875. 1st Coll. Prize.
w 1875-6. 2nd Year Student, 1st Coll. Prize.

Shea (H. G.), London.
1860. 1st Year Student, Hon. Cert.
1861. 2nd Year Student, Hon. Cert.
1862. 3rd Year Student, 2nd Coll. Prize.

Shea (J.), London.
1855. Midwifery, Hon. Cert.
1859. Midwifery, Hon. Cert.

Shearer (D. F.), Bradford, Yorks.
s 1888. 2nd Year Student, ½ 2nd Coll. Prize.

Sheppard (C. E.),‡ Kensington.
w 1873-4. 1st Year Student, 1st Coll. Prize.
s 1874. 1st Year Student, 2nd Coll. Prize.
w 1874-5. 2nd Year Student, 1st Coll. Prize.
s 1875. 1st Coll. Prize.
w 1875-6. 3rd Year Student, 2nd Coll. Prize;
Physical Society's 2nd Year's Prize.
w 1876-7. 4th Year Student, the Treasurer's Gold Medal.
w 1877-8. Solly Medal and Prize, £20. Paper published in Hosp. Reports, Vol. VIII.

Sheppard (W. J.), Kensington.
w. 1880–81. 3rd Year Student, 3rd Coll. Prize.
w 1881-2. The Treasurer's Gold Medal.

Sherrington (C. S.),§ Caius Coll., Cambs.
w 1882–3. 6th Year, Grainger Testimonial Prize.

† Assist.-Physician to, and Joint Lecturer on Pathological Anatomy and Demonstrator of Morbid Anatomy at, St. Thomas's Hospital.

‡ Late Resident Assistant-Physician and Medical Registrar to St. Thomas's Hospital.

§ Lecturer on Physiology at St. Thomas's Hospital.

SHIRTLIFF (E. D.), Kingston-on-Thames.
w 1882–3. 2nd Entrance Science Scholarship.

SIDDALL (J. B.),* Morton, Derby.
1862. 1st Year Student, Hon. Cert.
1863. 2nd Year Student, Hon. Cert.
1864. 3rd Year Student, Hon. Cert.; Hon. Cert. for the Cheselden Medal.

SIMMONS (H. B. M.), West Indies.
1849. Descriptive Anatomy, Hon. Cert.

SIMON (M. F.), Blackheath.
1866. 1st Year Student, 1st Coll. Prize.
1869. 3rd Year Student, 3rd Coll. Prize; Prosector's Prize; Prize and Hon. Cert. for Surgery and Surgical Anatomy.

SIMS (G. S.), Derby.
s 1881. 1st Year Student, 3rd Coll. Prize.

SISSONS (W. H.), Hull.
1858. Matriculation Examination—Physics, &c., Prize.
1859. 2nd Year Student, Hon. Cert.; Clinical Medicine, Prize; Physical Society's Essay, Prize.
1860. 3rd Year Student, 2nd Coll. Prize. Physical Society's Prize.

SKINNER (W.), Stockton-on-Tees.
1848. Botany, Hon. Cert.; Materia Medica, Hon. Cert.

SKIPPER (J.), Dalston, London.
1852. Midwifery, Hon. Cert.

SKIPTON (S. S.), East Indies.
1851. Midwifery, Hon. Cert.

SLATER (J. S.), Bath.
1868. 1st Year Student, 1st Coll. Prize.
1869. Physical Society's 2nd Year's Prize.
1870. 3rd Year Student, 2nd Coll. Prize; Treasurer's Gold Medal.

SLAUGHTER (C. H.), Farningham.
1855. Midwifery, Hon. Cert.

SLAUGHTER (G. M.), Farningham.
1854. Midwifery, Hon. Cert.

SMITH (E.), Wandsworth Common.
w 1888–9. 1st Year Student, 2nd Entrance Science Scholarship. The William Tite Scholarship.

SMITH (H. U.), Reading.
w 1876-7. 4th Year Student, Cheselden Medal.

SMITH (R. P.),† Belvedere.
s 1876. 2nd Year Student, 2nd College Prize.

SMYTH (H. J.), Brondesbury.
w 1882–3. 1st Year Student, 3rd Coll. Prize.
s 1883. 1st Year Student, 1st Coll. Prize.
w 1883–4. 2nd Year Student, 1st Coll. Prize.
s 1884. 2nd Year Student, 2nd Coll. Prize.
w 1885–6. 4th Year Student, Treasurer's Gold Medal.

SNAITH (F.), Boston, Lincolnshire.
1864. 3rd Year Student, Hon. Cert.

SOLLY (E.),‡ Congleton.
w 1883–4. 2nd Year Student, 2nd Coll. Prize
w 1885–6. Solly Medal and Prize.

SOLLY (R. V.), Congleton.
w 1884–5. 2nd Year Student, ½ 2nd College Prize.
w 1886-7. 4th Year Student, qualified for Cheselden Medal.

SPRAKELING (R. J.), Canterbury.
1855. Midwifery, Hon. Cert.
1856. 2nd Year Student, Hon. Cert.; Clinical Medicine, Prize.

STABB (A. F.), Ilfracombe.
w 1885–6. 1st Year Student, 1st Entrance Science Scholarship; The William Tite Scholarship.
s 1886. 1st Year Student, 2nd College Prize.
w 1886–7. 2nd Year Student, The Musgrove Scholarship
s 1887. 2nd Year Student, 1st Coll. Prize.
w 1887–8. 3rd. Year Student, 2nd Tenure of Musgrove Scholarship, with 1st Coll. Prize.
w 1888–9. 4th Year Student, qualified for Cheselden Medal. Treasurer's Gold Medal.

STABB (E. C.), Ilfracombe.
w 1883–4. 2nd Year Student, Prosector's Prize.
s 1884. 2nd Year Student, 1st Coll. Prize.
w 1885–6. 4th Year Student, qualified for Cheselden Medal.

STADDON (J. H.), London.
1858. Clinical Medicine, Prize.
1859. Clinical Medicine, Prize.

STEPHENS (J. N.), Walton-on-Thames.
w 1876-7. Physical Society's 1st Year's Prize.

STEPHENS (S. Sanders), Taunton.
1863. Physical Society's 2nd Year's Prize.

STODDART (F. W.), Bristol.
w 1877-8. 1st Year Student, 1st Coll. Prize.

STOKES (W. G. G.), Cambridge.
w 1887–8. 3rd Year Student, 3rd Coll. Prize.

STONE (W. H.),§ London.
1854. Matriculation Examination—Scholarship; 1st Year Student, Scholarship; Descriptive Anatomy, Hon. Cert.;
1854. Botany, Prize; Chemistry, Prize.
1855. 2nd Year Student, Scholarship; Forensic Medicine, Prize; Physical Society's Essay, Prize; Practical Chemistry, Prize; Medicine, Prize; Descriptive Anatomy, Hon. Cert.; Materia Medica, Prize; Physiology, Prize; [Prize. Clinical Medicine, Mr. N. Smith's
1856. Clinical Medical Prize; [Medal. General Proficiency, Treasurer's

---

* Late Physician to H.B.M. Legation, Japan.

† Resident Physician and Medical Superintendent, Bethlem Royal Hospital for Lunatics. Late Resident Assistant-Physician to St. Thomas's Hospital.

‡ Surgical Registrar at St. Thomas's Hospital.

§ Examiner in Medicine, Royal College of Physicians. Physician to, and Lecturer on Physics and Natural Philosophy, and on Materia Medica at St. Thomas's Hospital; Late Assistant-Physician to the Hospital for Consumption, Brompton.

SUMMERHAYES (H.), Crewkerne, Somersetshire.
1861. Matriculation Examination—Classics and Mathematics, President's Prize; [Prize; Modern Languages, &c., College Physics and Natural History, College Prize;
The William Tite Scholarship.
1862. 2nd Year Tite's Scholarship.
1863. 3rd Year Tite's Scholarship; Treasurer's Gold Medal.

SUMMERHAYES (W.), Crewkerne, Somersetshire.
1856. Matriculation Examination—Classics and Mathematics, Hon. Cert.; Matriculation Examination—Modern Languages, Prize.

SUTCLIFF (E.), Camberwell.
1861. 1st Year, 3rd College Prize; Matriculation Examination—Hon. Cert.
1863. 3rd Year Student, 3rd Coll. Prize.

SUTCLIFFE (J.), Ashton-under-Lyne.
1869. Prosector's Prize.

SUTCLIFFE (W. G.), Clapham.
w 1888–9. 1st Year Student, 1st Coll. Prize.

SWALLOW (J. D.), Reading.
1861. 2nd Year Student, Hon. Cert.

SWEETING (R. B.), Reading.
1853. 1st Year Student, Scholarship; Descriptive Anatomy, Hon. Cert.; Chemistry, Hon. Cert.
1854. 2nd Year Student, Scholarship; Midwifery, Prize.
1855. 3rd Year Student, Scholarship; Midwifery, Hon. Cert.; [Prize. Clinical Medicine, Treasurer's

SWEETING (T.), Reading.
1855. Midwifery, Hon. Cert.

TAKAKI (Kanehiro),* Kasumigaseki, Tokio, Japan.
w 1875–6. 1st Year Student, 3rd Coll. Prize.
s 1876. 2nd College Prize.
w 1876–7. 2nd Year Student, 1st Coll. Prize.
s 1877. 2nd Year Student, 3rd Coll. Prize.
w 1877–8. 3rd Year Student, 2nd Coll. Prize.
w 1878–9. 4th Year Student; "The Cheselden Medal;" The Treasurer's Gold Medal.

TALBOT (G. T.), Kidderminster.
1848. Medical Reports, Dr. Roots' Prize.

TAYLOR (C. M.), Wrawby, Brigg.
1871. 1st Year Student, 2nd Coll. Prize.
w 1872. 2nd Year Student, 1st Coll. Prize.
w 1873. 3rd Year Student, 1st Coll. Prize; Surgery and Surgical Anatomy, Hon. Cert.

TAYLOR (S.),† Burton-on-Trent.
w 1872. 3rd Year Student, Hon. Cert.

* Director-General of the Medical Department Imperial Japanese Navy. Surgeon to the Tokio General Hospital.

† Assistant Physician West London Hospital, Demonstrator of Anatomy, St. Thomas's Hospital. Late Physician North London Hospital for Consumption.

TAYLOR (S. J.), Grantham.
s 1875. 1st Year Student, Hon. Cert.
w 1875–6. 2nd Year Student, The Musgrove Scholarship.
w 1876–7. 3rd Year Student, 2nd Year Musgrove Scholarship, and 1st College Prize.
w 1877–8. The Mead Medal; The Treasurer's Gold Medal.

TEANBY (F. W.), Turnham Green.
1851. Practical Midwifery, Prize.
1852. Clinical Medicine, Junior Prize; Midwifery, Hon. Cert.

THOMAS (L. M.), Camberwell.
1866. 1st Year Student, 3rd Coll. Prize.
1867. 2nd Year Student, 3rd Coll. Prize.
1869. 3rd Year Student, 2nd Coll. Prize; Cheselden Medal.

THOMAS (P. C.), Chelsea.
w 1887–8. 4th Year Student, qualified for the Mead Medal.

THOMAS (W. L.), Neath, Glamorgan.
1845. Chemistry, Prize; Materia Medica, Prize.
1847. Medicine, Hon. Cert.; Physiology and Anatomy, Prize. Physical Society's Essay, Prize.

THOMPSON (F. H.), Tenbury.
1870. Prosector's Prize.

THUDICHUM (G. D.), Kensington.
w 1878–9. Physical Society's 2nd Year's Prize.

TIMOTHY (P. V.), London.
1851. Practical Midwifery, Prize; Midwifery, Hon. Cert.

TODD (A. J. M.), Gravesend.
w 1863. 1st Year Student, 2nd Coll. Prize.
w 1864. Prosector's Prize.

TOLLER (S. G.), Notting Hill.
w 1885–6. 1st Year Student, 2nd Entrance Science Scholarship.
s 1886. 1st Year Student, 1st College Prize.
w 1886–7. 2nd Year Student, ½ 1st and 2nd College Prizes.
w 1887–8. 3rd Year Student, 2nd Coll. Prize.
w 1888–9. 4th Year Student, The Mead Medal.

TOMSON (K.), Luton, Beds.
1842. Materia Medica, Prize.
1843. Medicine, Prize; Clinical Medicine, Hon. Cert.

TOMSON (W. B.), Luton, Beds.
w 1879–80. 1st Year Student, 2nd Coll. Prize.
s 1880. 1st Year Student, 2nd Coll. Prize.
w 1880–81. 2nd Year Student, The Musgrove Scholarship, Prosector's Prize.
w 1881–2, 3rd Year Student, 2nd Coll. Prize; 2nd Tenure of Musgrove Scholarship.
s 1882. 2nd Coll. Prize.
w 1882–3. Treasurer's Gold Medal.

TONKING (J. H.), Camborne.
w 1884–5. 3rd Year Student, ½ 2nd and 3rd College Prizes.
w 1885–6. 4th Year Student, The Cheselden Medal.

TOTSUKA (K.),‡ Tokio, Japan.
s 1882. 1st Year Student, 2nd Coll. Prize.

‡ Deputy Inspector General of Hospitals, Imperial Japanese Navy.

w 1882–3. 2nd Year Student, ½ Musgrove Scholarship and 1st Coll. Prize combined.
w 1883–4. 3rd Year Student, 2nd tenure of ½ Musgrove Scholarship, with 3rd College Prize.

Trend (H. G.), Bridgewater.
1853. Practical Midwifery, Prize; Midwifery, Hon. Cert.
1854. Midwifery, Hon. Cert.; Clinical Medicine, Treasurer's Prize.

Treves (W. K.), Dorchester.
1863. Matriculation Examination—Physics and Natural History, Hon. Cert.; and Modern Languages and Modern History, College Prize and Hon. Cert.; 1st Year Student, Hon. Cert.
1865. 3rd Year Student, 2nd Coll. Prize; Prosector's Prize.

Turney (H. G.), Camberwell Grove.
w 1885–6. 2nd Year Student, 2nd Coll. Prize.
s 1886. 2nd Year Student, 2nd College Prize.
w 1886–7. 3rd Year Student, 3rd Coll. Prize.
s 1887. 3rd Year Student, 1st Coll. Prize.
w 1887–8. The Mead Medal.

Tyrrell (W.), Richmond.
1851. Descriptive Anatomy, Hon. Cert.
1852. Medicine, Hon. Cert.; Surgery, Hon. Cert.
1853. Forensic Medicine, Hon. Cert.; Ophthalmic Essay, Mr. Dixon's Prize
1854. Surgical Reports, President's Prize

Umney (W. F.), Sydenham.
w 1887–8. 2nd Year Student, 1st Coll. Prize

Vardy (J. L.), London.
1854. Midwifery, Hon. Cert.
1855. Practical Midwifery, Prize.

Verdon (H. W.), Eccles.
1872. 2nd Year Student, Hon. Cert.

Wagstaffe (W. W.),* Kennington.
1862. Matriculation Examination—Classics and Mathematics, President's Prize.
Physics and Natural History College Prize; [Prize;
Modern Languages, &c., College 1st Year Student, Treasurer's Prize;
1863. 2nd Year Student, 1st. Coll. Prize.
1864. 3rd Year Student, 1st Coll. Prize; Physical Society's 3rd Year's Prize Cheselden Medal; Treasurer's Gold Medal.

Walker (R.), Kendal.
1854. Descriptive Anatomy, Hon. Cert.; Midwifery, Hon. Cert.
1855. Midwifery, Hon. Cert.

Wallace (C. S.), Haslemere.
w 1887–8. 1st Year Student, ½ 2nd Coll. Prize
s 1888. 1st Year Student, 2nd Coll. Prize.
w 1888-9. 2nd Year Student, 1st Coll. Prize.

Waller (A.), Islington.
1864. 1st Year Student, 1st Coll. Prize.
1865. 2nd Year Student, 1st Coll. Prize.
1866. 3rd Year Student, 1st Coll. Prize; Physical Society's 3rd Year's Prize Treasurer's Gold Medal.

* Late Assistant Surgeon to, and Joint Lecturer on Anatomy at, St. Thomas's Hospital. Late Member of the Board of Examiners, Royal College of Surgeons.

Waller (C. B.), London.
1860. 2nd Year Student, Hon. Cert.

Ward (F. H.),† Scarboro'.
1863. 1st Year Student, Treas. Prize.
1864. 2nd Year Student, 1st Coll. Prize; Physical Soc. 2nd Year's Prize.
1865. 3rd Year Student, 1st Coll. Prize; Physical Soc. 3rd Year's Prize; Cheselden Medal; Treasurer's Gold Medal.

Watson (F.), Nottingham.
1859. 1st Year Student, Hon. Cert.; Matriculation Examination—Physics, &c., Prize.

Way (F. W.), Fratton, Portsmouth.
1853. Descriptive Anatomy, Hon. Cert.; Chemistry, Hon. Cert.;
1854. Midwifery, Hon. Cert.; Surgery, Hon. Cert.

Way (J. P.), Portsmouth.
1861. 1st Year, Hon. Cert.

Webber (W. W.), Crewkerne.
w 1876–7. 1st Year Student, 3rd Coll. Prize.

Webster (E.), Lee.
w 1883–4. 1st Year Student, 1st Coll. Prize.
s 1885. 2nd Year Student, ½ 2nd Coll, Prize.

Webster (H.), Dulwich.
1851. Matriculation Sch., Hon. Cert.; Descriptive Anatomy, Hon. Cert.
1852. Botany, Hon. Cert.
1853. Midwifery, Hon. Cert.

Weekes (F. H.), Southampton.
w 1873–4. 1st Year Student, 3rd Coll. Prize.
s 1874. 3rd Coll. Prize.
w 1874–5. 2nd Year Student, 2nd Coll. Prize.
s 1875. 3rd Coll. Prize.
w 1875–6. 3rd Year Student, 3rd Coll. Prize.

Wells (A. E.), Brixton.
w 1877–8. 1st Year Student, 2nd Entrance Science Scholarship.

West (J. F.) ‡
1853. Midwifery, Hon. Cert.
1854. Forensic Medicine, Hon. Cert.; Pathology, Hon. Cert.
1855. Ophthalmic Reports, Prize.

Wheaton (F. D. W.), Honiton.
1845. Practical Midwifery, Hon. Cert.

Wheaton (S. W.), Battersea Park.
s 1885. 3rd Year Student, ½ 1st and 2nd College Prizes.
w 1885–6. 4th Year Student, The Mead Medal.

Whitehead (E. T.), Battersea.
w 1886–7. 1st Year Student, 2nd Coll. Prize.
s 1888. 2nd Year Student, ½ 2nd Coll. Prize.

Whitehead (J.), Preston.
1861. 1st Year, Hon. Cert.
1862. 2nd Year Student, 3rd Coll. Prize.
1863. 3rd Year Student, 2nd Coll. Prize.

† Assistant Medical Officer, County Asylum, Tooting, Surrey.

‡ Late Surgeon to Queen's Hospital, and Professor of Clinical Surgery at Queen's College, Birmingham.

WILES (J.), Hitchin, Herts.
1850. Physiology, Hon. Cert.
1851. (Accoucheur) Midwifery, Prize.

WILLIAMS (H.), Longley, near Gloucester.
1868. 1st Year Student, 2nd Coll. Prize.
1869. 2nd Year Student, 3rd Coll. Prize.

WILLIAMS (J.), Westerleigh, Bristol.
1855. 1st Year Student, Scholarship;
Midwifery, Prize;
Botany, Prize;
Chemistry, Hon. Cert.;
Descriptive Anatomy, Prize;
Materia Medica, Hon. Cert.
1856. 2nd Year Student, Trea's. 1st Prize.
1857. 3rd Year Student, Hon. Cert.
Gen. Proficiency, Treasurer's Medal.

WILLIAMS (J.), Doncaster.
1858. 1st Year Student, Hon. Cert.
1859. 2nd Year Student, Hon. Cert.;
Clinical Medicine, Prize.
1860. 3rd Year Student, Hon. Cert.

WILLIAMS (P. H.), Monmouth.
s 1872. 1st Year Student, Hon. Cert.

WILLIAMS (P. M. G.), Newcastle Emlyn.
1864. Practical Midwifery, Prize.

WILLIAMS (R. M.) Beaumaris.
w 1879–80. 1st Entrance Science Scholarship.

WILLIAMS (W. R.),* Nottingham.
1856. Matriculation Examination in Classics, Mathematics, Hon. Cert.

WILLIAMSON (R. J.), Ripon.
w 1876–7. 1st Entrance Sc. Scholarship.

WINSTON (W. B.), Oxford Gardens.
w 1887–8. 1st Year Student, 2nd Entrance Science Scholarship.
w 1888-9. 2nd Year Student, 2nd Coll. Prize.

* Late one of H. M. Commissioners in Lunacy; late Resident Physician to Bethlem Royal Hospital; late Lecturer on Mental Diseases at St. Thomas's Hospital.

WITHERBY (W. H.), Croydon.
1858. Matriculation Examination in Modern Languages, Prize.

WOAKES (E.), Luton, Beds.
1856. 1st Year Student, Hon. Cert.
1857. 2nd Year Student, 2nd Prize;
Clinical Medical Prize.
1858. Essay on Neuralgia, Mr. N. Smith's Prize;
Surgery and Surgical Anatomy, Cheselden Medal.

WOOD (G. J.), London.
1863. Descriptive Anatomy, Hon. Cert.

WOOD (R. H.), Loughborough, Leicester.
1854. Descriptive Anatomy, Hon. Cert.
1855. Surgery, Hon. Cert.;
Midwifery, Prize;
Medicine, Hon. Cert.;
Descriptive Anatomy, Prize;
Physiology, Hon. Cert.
1856. Physical Society's Essay, Prize.

WOODHOUSE (T. J.), London.
1855. Chemistry, Hon. Cert.;
Materia Medica, Hon. Cert.

WOODMAN (W. E.), Camberwell.
s 1875. 1st Year Student, 2nd Coll. Prize.

WOTTON (H. G.)
1855. Midwifery, Hon. Cert.
1856. Midwifery, Hon. Cert.

WRENCH (E. M.), Cornhill.
1851. Descriptive Anatomy, Hon. Cert.;
Physical Society's Essay, Treasurer's 1st Year's Prize;
1852. Physiology, Hon. Cert.

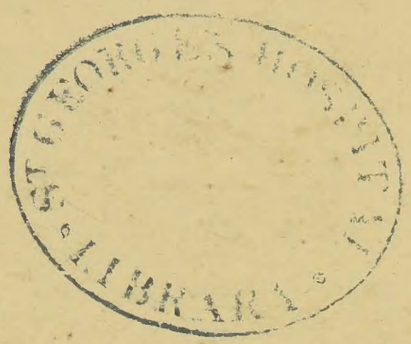
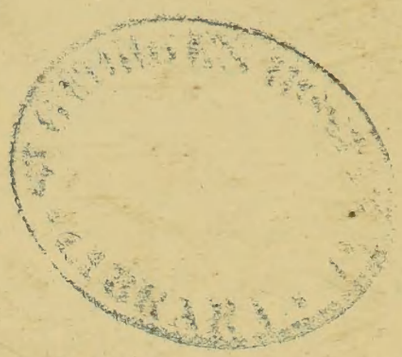
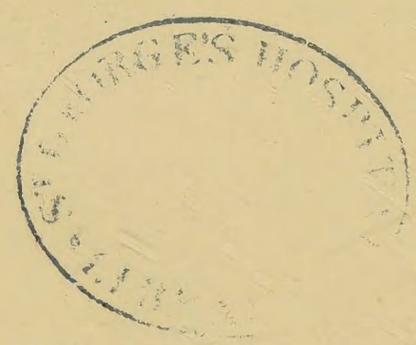
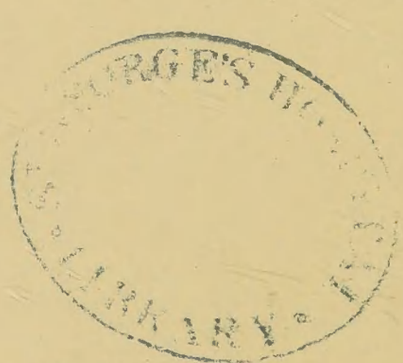
WRIGHT (E. H.), Jersey.
1885. 2nd Year Student, ½ 2nd Coll. Prize.

WYMAN (W. S.), Kettering, Northampton.
1852. Matriculation Examination Scholarship.

All old Students of St. Thomas's Hospital are requested to send their *present* addresses to The Medical Secretary, *St. Thomas's Hospital, Albert Embankment, Westminster Bridge, S.E.*

LONDON: PRINTED BY WM. CLOWES AND SONS, LIMITED, STAMFORD STREET AND CHARING CROSS.

WELLCOME INSTITUTE LIBRARY


ST. GEORGE'S HOSPITAL
LIBRARY

LIBRARY

ST. GEORGE'S HOSPITAL
LIBRARY

LIBRARY